1966

Increasing Income on 240 and 400 Acre Farms in Lac qui Parle County, Minnesota

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INCREASING INCOME ON 240 AND 400 ACRE FARMS IN LAC QUI PARLE COUNTY, MINNESOTA

BY

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A thesis submitted
in partial fulfillment of the requirements for the
degree Master of Science, Department of
Economics, South Dakota State
University

June, 1966

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IN LAC QUI PARLE COUNTY, MINNESOTA

This thesis is approved as a creditable, independent investigation by a candidate for the degree, Master of Science, and is acceptable as meeting the thesis requirements for this degree, but without implying that the conclusions reached by the candidate are necessarily the conclusions of the major department.

Thesis Adviser

Head of the Major Department

ACKNOWLEDGMENTS

The author gratefully expresses his appreciation to several persons for their assistance throughout this study:

To Dr. Rex D. Helfinstine, thesis advisor, for offering encouragement and guidance throughout the course of this study.

To Leonard Benning, marketing specialist, for his confidence and reassurance prior to and during this study.

Thanks to Mrs. Dale Hofemann and Mrs. Donald Moorhead of the County Extension Staff, for their cooperation and assistance during the time this study was produced.

And especially to my wife, Margaret, and family for their patience and sacrifices necessary for me to complete this thesis.

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CHAPTER I.

INTRODUCTION

The purpose of this study is to evaluate alternative farm organizations for future modal-sized farms in Lac qui Parle County, Minnesota. The evaluation, to be made by farm managers, will be based on complete operating statements. The summary data is presented in tabular form so that all of the alternatives may be readily compared.

The trend toward the substitution of capital for labor to decrease the cost per unit of production is observable on farms in Lac qui Parle County. This capital is represented in improved methods and new technology. Both of these may save labor by themselves, but also make possible the enlargement of the farm's business.

Efforts aimed at achieving this substitution have involved increased capital investment, farm enlargement, and enterprise specialization. While the absolute amount of labor input has been decreasing per farm, the quantity of output per acre, amount of investment in land, and operating capital have been increasing. At the same time, the number of different kinds of crop and livestock enterprises per farm has been decreasing.

The downward trend of farm income, as indicated in Table I, has caused many farmers to consider reorganizing their present group of farm enterprises as a means of increasing income. These changes fall into three main areas: selecting the most profitable production

enterprises, adopting improved production methods, and adjusting the size of business.

Table I. Income Data for Lac qui Parle County and the State of Minnesota for 1949 and 1959

	Lac qui Parle		Minnesota
Year	Median Farm Income	Median Non-farm Income	Median Family Income
1949	$2,382	$2,643	$3,163
1959	2,358	3,088	5,573
Percent change from 1949 to 1959	-1	16.8	76

Source: Bureau of the Census, Population Census, Vol. II, part 23, Minnesota, Table 45 and 46, 1950, and Population Census (1) 25C, Minnesota, Table 91 and 93, 1950.

To assist farm managers in enterprise determination, data presented will involve investment, expenses, income, labor requirements, and the distribution of crops and livestock. Detailed background information is contained in the Appendix, also Table X and Table XV.

For example, applicable input data related to the cost of crop and livestock production will be included in detail. The unit cost of so-called "lumpy resources" is usually not a product of the conventional farm accounting system. The fuel, oil, and lubricant cost of plowing an acre of land and the time required to perform various field operations are included in Table VI and Table VII of

the Appendix.

Objectives

This study was made to serve as a guide for farmers who are planning to reorganize their farm business. Specific objectives of this analysis were: (1) to determine the profitability of various crop and livestock organizations for representative 240 and 400 acre farms in Lac qui Parle County, Minnesota, and (2) to determine the obstacles to adoption of the more profitable plans by county farmers.

Assumptions

The assumptions in this study were:

1. It was assumed that the land resource on the farms studied was fixed at 240 and 400 acres.
2. It was assumed that a farm operator could furnish 3,000 hours of labor per year on a farm with a substantial livestock enterprise, or 2,500 hours per year on a crop farm. It was further assumed that hired and family labor could furnish 600 hours of labor per year.
3. It was assumed that adequate capital could be made available from liquid assets and loans to secure enough capital to finance complete farm reorganization within a period of 3 to 5 years.
4. It was assumed that above average management is available to adopt an improved farm organization plan.
5. It was assumed that farm family goals include enough

income to maintain an average standard of living; improve family living quarters; increase family recreation, including travel; provide training beyond high school for the children; and assure a retirement income for the husband and wife.[1]

Procedure

The selection of the size of farms for this study is based on the present modal[2] sized farms and the expected trend in farm size in Lac qui Parle County. The labor resource available for these eight farms is based on census information pertaining to the number of farm operators, full-time workers, part-time workers, and the amount of unpaid family labor.

Farms of 240 and 400 acres were selected for this study because they represent two of the modal-sized groups in the county in 1964, and if present trends continue, they will be the two modal-sized farms during the next ten years or more. The other important consideration in selecting this size is the labor requirement. The labor normally available from an operator and his family is considered adequate to operate either the 240 or 400 acre farm.

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[1]Results of a survey of 24 Lac qui Parle County families in 1964-65.

[2]Modal is used here in the statistical sense to mean the value or observation that occurs most frequently in a given series.

The following table exhibits the three distinct modal-sized groups of farms in the county.

Table II. Number and Change in Number of Farms by Size Group in Lac qui Parle County, 1959 and 1964

Size in Acres	Number[a] 1959	Number 1964	Percent of Change	Percent of Total Farms 1959
140-179	364	248	-32	14.1
220-259	320	232	-25	14
260-499	691	708	+ 2.5	42

Source: Bureau of the Census, U. S. Census of Agriculture, 1964.

[a]The total number of farms in Lac qui Parle in 1964 was 1,676.

The procedure for this study involved developing typical farm budgets. This method is also known as the synthetic budget or substitution method of budgeting.

> "The budget method involves a calculation of the probable physical or economic effects of various alternative organizations for a particular farm or set of conditions. Such an analysis requires input-output data from experimental results or surveys of the area or of comparable areas and expected prices and costs. Selection of the most profitable type of organization depends upon the adequacy of the researchers empirical knowledge of the area and the exhaustiveness with which the various alternatives are explored. That is to say it is a trial-and-error technique for arriving at the same end—maximum profit—as marginal analysis does."[3]

Helfinstine, R.D., An Economic Comparison of Dryland Farming and Potential Irrigation Farming in Central South Dakota. Thesis PH. D. University of California.

This study is concerned with determining the products to be produced to maximize the value of the total product. The analysis was for one time period (one year) but is expected to be used by farm managers for enterprise selection and decision-making in the long run. This was done by analyzing the estimated costs and returns of two modal-sized farms in the county (240 and 400 acres) involving four different combinations of livestock enterprises. Alternative crop and livestock programs were selected from those most frequently used in the county. Only adjustments in the amount of capital and labor are indicated in the four alternative organizations for the two modal-sized farms. The addition of land is an alternative not considered.

The models used in this study were derived from empirical knowledge of the area, census reports, and survey data. Soil productivity was considered equal for all farms. Variations in crop rotations, livestock enterprises, buildings, machinery, and equipment give rise to different capital and labor requirements for each model.

It is expected that farm managers will be able to select the most profitable alternatives by comparing one or more of the eight budgets set forth in this study with an analysis of their present budget and resource situation. The amount of change in investment and operating capital offset by the release of present resources over the time period required to reach new production and income goals will have to be calculated by each farm manager, anticipating farm

reorganization.

This study does not bear the burden of weighing all the advantages or disadvantages of each separate model.

Review of Literature

No study similar in objectives to this study has been made in Lac qui Parle County since World War II.

Due to the location of the Southwestern Farm Management Service Area, about 80 miles to the southeast of Lac qui Parle County, applicable information for enterprise selection can be obtained. This service is operated by the University of Minnesota and annually analyzes about 150 farm account records. On-farm enterprise alternatives are centered around corn, soybeans, alfalfa, hogs, and beef cattle. Soil resources and land use restrictions are essentially the same as the area studied. The exception is a somewhat longer growing season of about ten days.

The annual summary of 143 farms in 1963 agrees with the observed enterprise changes in Lac qui Parle County. It indicates that the percent of high-return crops (corn, soybeans, alfalfa, and alfalfa-brome) has increased from 41.2 percent of the crop acres in 1940 to 67.1 in 1963. Total work units (ten hour day) per worker have increased from 273 to 334 per year. Livestock units per 100 acres have almost doubled.[4]

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[4]Nodland, T. R., Annual Report of Southwestern Farm Management Service, 1963, Department of Agricultural Economics, Institute of Agriculture, St. Paul, Minnesota, June, 1964.

According to the census, high-return crops in Lac qui Parle County have increased from 48 percent of the crop acres in 1954 to 57 percent in 1959. The effect of a considerably higher percent of high-return crops is reflected in this study. The average sized farm in Lac qui Parle County in 1959 was 250 acres.[5]

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[5]Bureau of the Census, U. S. Census of Agriculture, 1959, Vol. I, County Table II.

CHAPTER II.

POPULATION TRENDS

Lac qui Parle County is characterized by a high dependency ratio and an absolute decline in total population during the past 20 years. Almost 25 percent of the population is under five or over 65 years of age (Table III). The decline in population between 1940 and 1960 was 1,179. The decline in the number of people engaged in agriculture during the same period was 1,026 (Table IV).

Table III. County Population by Age Group
Lac qui Parle County, Minnesota
1950 and 1960

Year	Percent Under 5 years	Percent Over 65 years	Median Age
1950	11.1	9.5	30.4
1960	10.7	13.8	33.1

Source: Bureau of the Census, U. S. Census of Population, General Social and Economic Characteristics, Minnesota, 1960.

Table IV. Employment by Industry Type
Lac qui Parle County, Minnesota
1940, 1950 and 1960

Year	Population	Labor Force Number	Agriculture Forestry Fisheries Percent	Trades and Services	Other[b]
1940	15,509	5,726	56.8	24.9	18.3
1950	14,545	5,388	54.1	30.4	15.5
1960	13,330	4,893	45.5	36.8	17.7

Source: Bureau of the Census, op. cit.

[b]Includes those employed in mining, manufacturing, communications, transportation, unemployed and industries not reported.

Population trends indicate that this area is being depopulated and the dependency ratio is increasing. The average age of farm operators in 1960 was 47 years.[6]

[6]U. S. Census, op. cit., County Table 5.

Economic Changes

The most significant economic trend on farms in Lac qui Parle County is the substitution of capital for labor (Table V).

Table V. Selected Equipment and Labor Data
Lac qui Parle County, Minnesota
1959 and 1964

	1959	1964	Percent Change
Farm Tractors	4,375	4,369	- .01
Grain combines	1,443	1,340	- 9
Corn pickers	1,528	1,349	-11
Pick-up balers	477	612	+29
Regular hired workers	135	126	- .07
Hired labor, farms reporting	793	860	+ .08

Source: U. S. Census, op. cit., County Table 6.

This trend is reflected in the adjustment in farm size and enterprise selection taking place. Livestock enterprises with a high labor requirement are being rejected on farms where mechanized farming can efficiently utilize the labor resource. The amount of land and the size of the livestock enterprises are being fitted to the labor supply. Farms in Lac qui Parle County are becoming fewer in number and larger in size.

As farmers accept technology in the form of machines with increased capacity and production aids, such as commercial fertilizer, they reduce the labor input per unit of production.

There were 2,094 farms in 1940 and 1,676 in 1964, this is a decrease of 418 farms.[7] The average size of farms increased from 232 acres in 1950 to 284 acres in 1964; this is an average increase of 52 acres.

The firmest production trend during the past 20 years is a decreasing number of cows and potential cows for milk production. Poultry for egg production shows a similar trend (Appendix, Table I). The number of farms making decisions to increase milk or egg production is not significant enough to materially affect the total number of cows and poultry.

The significant decisions are being made on the amount of beef and pork to be produced. The number of swine increased during the past ten years, while the number of cattle increased about 20 percent.[8]

Acreage devoted to corn production has remained almost the same since 1946. During the same ten-year period, soybeans have become the second largest crop, occupying twice as many acres as oats, which is the third ranking crop in acreage.

The median income of all families in Lac qui Parle County in 1960 was 26 percent below the median income for all families in

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[7]The reduction in the number of farms was increased by ten due to the change in definition of a farm in the 1959 census.

[8]U. S. Census, op. cit., County Table 7.

Minnesota. For Minnesota the median income was $5,573 and for Lac qui Parle County it was $3,088 in 1960.[9]

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[9]U. S. Census, op. cit., County Tables 9 and 11.

A. Description of the Area

Lac qui Parle is bordered on the west by South Dakota and on the north and east by Marsh Lake and Lac qui Parle Lake, which are a part of the Minnesota River (map, page 16). It is triangular in shape and is comprised of 776 square miles, or 496,640 acres. The surface of the area is moderately rolling or undulating, with local reliefs varying 10 to 30 feet. Variations increase to 100 feet in the western part of the county.[10] Except for this western portion, the whole area lies within the Barnes - Aastad - Flome Soil Association area.

> "These soils are dark colored, formed from calcareous loam glacial till. Barnes loam is well drained...Aastad is moderately well drained...Flome is poorly drained. Erosion control on rolling areas and drainage of poorly drained areas are major management problems."[11]

Soil conservation practices have reduced erosion problems, and 103 county and judicial ditches have made numerous private drainage systems profitable.[12] The Lac qui Parle County Soil and Water Conservation District has 532 co-operators; 267 of these have completed a basic farm plan.[13]

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[10]Elwell, J. Ambrose, Soil Survey of Lac qui Parle County, USDA, Bureau of Chemistry & Soils, 1924.

[11]Arneman, H. F., Soils of Minnesota, Extension Bulletin 278, University of Minnesota, St. Paul, 1963.

[12]Interview, Gloege, A. J., County Auditor, Lac qui Parle County, Madison, Minnesota, November 10, 1966.

Interview, Olson, Hector, Conservationist, Lac qui Parle Soil and Water Conservation District, Madison, Minnesota, Nov., 1965.

More than 19 inches of the annual total precipitation of 25 inches falls during the period from April to September. The average annual number of frost-free days is 146, (May 7 to October 1).[14]

Economic conditions favor agricultural production and habitation in the area studied. The marketing facilities include five villages and one city within the area. A modern system of roads, telephones, electrical power, radio, and television are available to all residents.

The major marketing area of Minneapolis and St. Paul, having a combined population of 1,482,030 in 1960, lies 165 miles east of the county. Watertown, South Dakota, with a 1960 population of 14,077, lies about 50 miles west. It serves as a major source of feeder cattle supply and as a shopping center. The greatest share of crops and livestock is marketed at Minneapolis and South St. Paul, Minnesota, and Sioux Falls, South Dakota. Sioux Falls had a population of 65,466 in 1960 and is located about 125 miles southwest of Lac qui Parle County.

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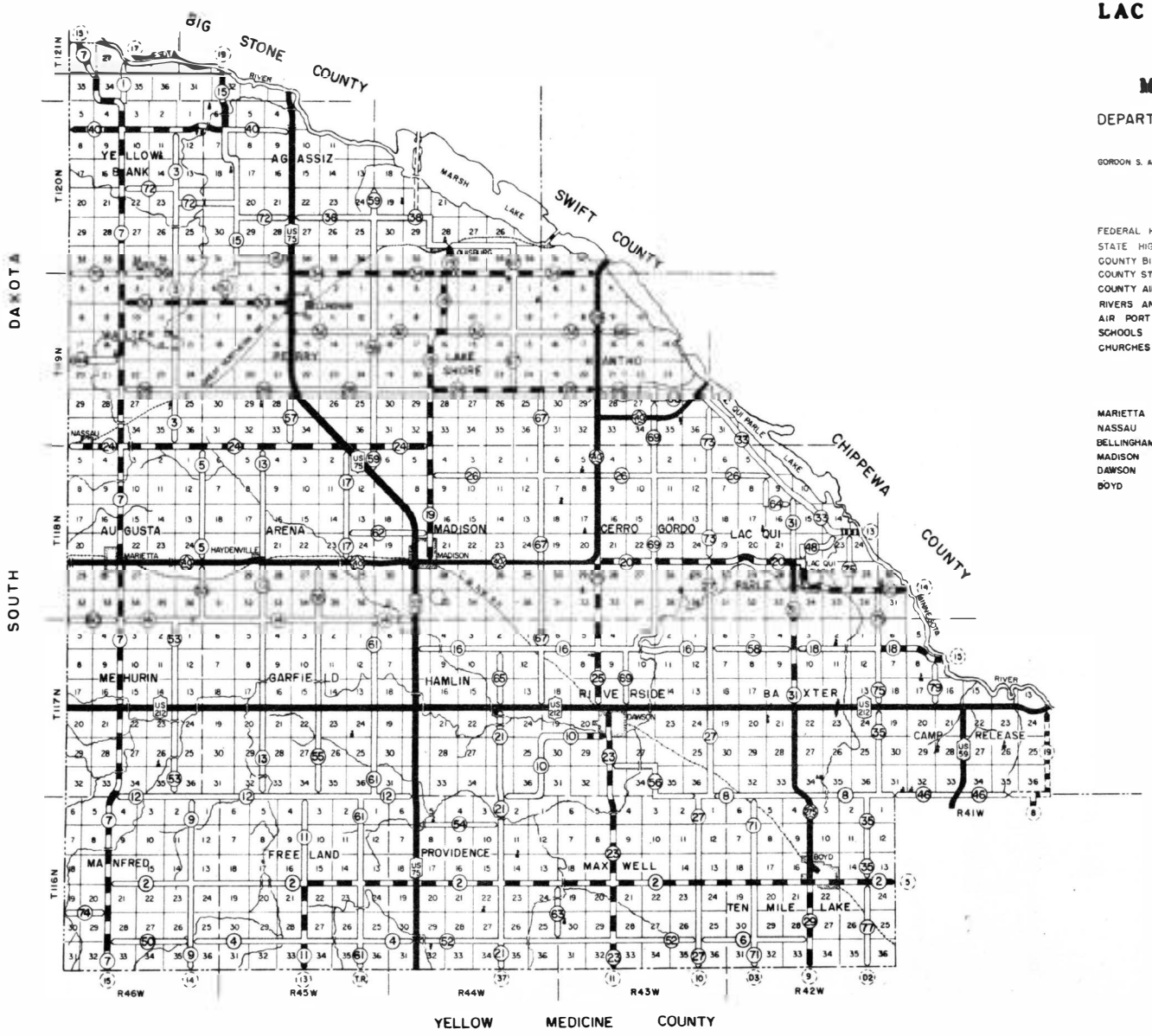
[14]Strub, Joseph, H., "Climatological Summary", U. S. Dept. of Commerce, Weather Bureau Station, Montevideo, Minnesota, 1931-1960.



LAC QUI PARLE COUNTY
MINNESOTA

DEPARTMENT OF HIGHWAYS
1966

GORDON S. ANDERSON — COUNTY ENGINEER

LEGEND
SCALE 1 IN. = 2 MI.

FEDERAL HIGHWAYS	(52)
STATE HIGHWAYS	(23)
COUNTY BITUMINOUS HIGHWAYS	
COUNTY STATE AID HIGHWAYS	UNDER (50)
COUNTY AID HIGHWAYS	ABOVE (49)
RIVERS AND CREEKS	
AIR PORT	
SCHOOLS	
CHURCHES	

CITY SECTIONS

MARIETTA	201
NASSAU	202
BELLINGHAM	203
MADISON	204
DAWSON	205
BOYD	206

N

B. Description of the Farms Studied

The farms described represent the present plans of operation of farms in Lac qui Parle County, Minnesota, and are typical of the 240 and 400-acre farms in the county. They are similar in topography, buildings, machinery, and other equipment to the 1,676 farm units in the area described.[15] The average sized farm is 284 acres.[16] Since farm land is generally sub-divided into multiples of 40 acres, a 240 and 400 acre farm will be used. Farms ranging in size from 220 to 259 acres make up 14 percent of the total number of farms. Farms ranging in size from 260 to 499 acres make up 42 percent of the total number of farms, Table VI.

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[15]Lac qui Parle County is located in the high risk crop production area of west central Minnesota. The hazard is created by dry hot weather occuring in July and August in some years.

[16]U. S. Census for Agriculture for Lac qui Parle County, Preliminary, 1964, Vol., 1.

Table VI. Number and Percent of Farms in Different Sized Groups Lac qui Parle County, Minnesota, 1964

Acres per Farm	Number of Farms, 1964	Percent
Under 10 Acres	28	1.7
10-49 Acres	63	3.8
50-69 Acres	19	1.1
70-99 Acres	58	3.5
100-139 Acres	57	3.4
140-179 Acres	248	14.8
180-219 Acres	126	7.5
220-259 Acres	232	13.8
260-499 Acres	708	42.2
500-999 Acres	128	7.6
1,000 or more Acres	9	.5

Source: Bureau of the Census, U. S. Census for Agriculture for Lac qui Parle County, preliminary, 1964, p. 2.

While there are many farms similar to the typical farms, they have a higher income and more labor units than the average. The average farm of 284 acres in Lac qui Parle County represented an investment in land and dwellings of $44,067 in 1964; this compares with $40,000 for the typical farm of 240 acres and $65,000 for the 400 acre farm.

The operating statements of the typical farms are shown in Tables VII and VIII.

Table VII. Summary of Typical 240 Acre Farm
Lac qui Parle County, Minnesota

Financial Summary

Expenses		Receipts		Inventory Value	
Seed	$ 544	Crops	$ 6,303	Land and Buildings	$40,000
Fertilizer	240	Livestock	9,376		
Custom Work	247			Machinery and Equipment	7,100
Labor		Total	$15,679		
Machinery repair	284			Livestock	5,500
Fuel, Oil, Lubricant	402	Less cash expense	6,421		
Building repair	350				
Taxes, Insurance	1,208	Net cash income	$ 9,258	Inventory Numbers	
Crop Chemicals	25				
Feed	1,505	Less depreciation	1,010	Feeder Cattle	14
Feeder Cattle	1,008			Dairy Cattle	10
Other	608	Net farm income	$ 8,248	Sows	10
				Dairy Heifers	5
Machinery depreciation---	$ 710	Less interest	2,900	Hens	350
Building depreciation---	300				
Interest, Investment----	2,900	Return to Labor and Management	$ 5,348	Labor Requirements	
Total Expense	$10,331			Operator Days	350

Table VII. (Con't)

Cropping Plan						Sold		
Crop	Acres	Yield	Unit	Pro-duction	Farm Use	Amount	Price	Value
Corn	46	65	bu.	2,990	1,398	1,592	1.00	$1,592
Corn Silage	8	96	ton		96			
Oats	40	50	bu.	2,000	2,000			
Soybeans	60	20	bu.	1,200		1,200	2.25	2,700
Tame Hay	10	3	ton	30	30			
Native Pasture	20	3	AUM					
Aftermath	40	.5	AUM	20				
Diverted	36							2,011

Livestock Plan						Sold
Item	Grade	Number	Av. Wt. Per Head	Amount	Price	Value
Dairy Steers	Good-choice	5	1,000	5,000	.18	$ 900
Cattle, Steers	Good-choice	9	1,050	9,450	.22	2,160
Dairy Cows		2	1,000	2,000	.15	300
Dairy Heifers		3	80	35/hd		105
Hogs	1 & 2	60	225	13,500	.16	2,160
Sows		8	400	3,200	.13	416
Eggs	17 doz. per head			713	.25	1,480
Chickens		329	5		.08	131
Cull Pullets		21	4		.08	7
Milk		10	6,200		2.90	1,798
				Total Receipts for Crops and Livestock		$15,679

Table VIII. Summary of Typical 400 Acre Farm
Lac qui Parle County, Minnesota

Financial Summary

Expenses		Receipts		Inventory Value	
Seed	$ 1,310	Crops	$14,550	Land and buildings	$65,000
Fertilizer	1,000	Livestock	11,550		
Custom Work	686			Machinery and equipment	11,225
Labor		Total	$26,100		
Machinery repair	449			Livestock	5,625
Fuel, Oil, Lubricant	780	Less cash expense	13,148		
Building repair	350				
Taxes, Insurance	1,530	Net cash income	$12,952	Inventory Numbers	
Chemicals	32				
Feed	885	Less depreciation	1,422	Feeder Cattle	50
Feeder Cattle	5,625				
Other	501	Net farm income	$11,530		
				Labor Requirements	
Machinery depreciation	$ 1,122	Less interest	4,954		
Building depreciation	300			Operator Days	263
Interest, Investment	4,954	Return to Labor and Management	$ 6,576		
Total Expense	$19,504				

Table VIII. (Con't)

Cropping Plan						Sold		
Crop	Acres	Yield	Unit	Pro-Duction	Farm Use	Amount	Price	Value
Corn	150	65	bu.	9,750	1,900	7,850	$1.00	$ 7,850
Oats	40	50	bu.	2,000	2,000			
Soybeans	140	20	bu.	3,750		3,750	2.25	6,350
Alfalfa-Brome Hay	20	2.5	ton	50	50			
Native Hay	20	2	ton	40		40	.10	4

Livestock Plan				Sold		
Item	Grade	Number	Av. Wt. Per Head	Amount	Price	Value
Cattle, Steers	Good-choice	50	1,050	52,500	.22	$11,550

Total Receipts for Crops and Livestock $26,100

Land Use and Cropping Systems

The land area in Lac qui Parle County is 494,720 acres. There are 16,381 acres in cities, towns, villages, roads, railroads and small tracts, plus another 3,502 acres in water areas less than 40 acres in size.[17] This leaves 474,837 acres that are described in Table IX.

Table IX. Land Use of Forest and Farm Land
Lac qui Parle County, 1963, and
Estimated Changes by 1975

	1963 Acres	Percent	1975 Estimated Acres	Percent
Crop land[a]	362,635	76.4	385,351	81.2
Pasture[b]	51,036	10.7	40,187	8.5
Woodland[c]	9,329	2.0	9,067	1.9
Other uses[d]	51,837	10.9	39,302	8.2
Out of inventory[e]			930	.2
	474,837	100.0	474,837	100.0

Source: Conservation Needs Study, 1959-1975, Prepared May, 1963, Lac qui Parle County Soil and Water Conservation District, Hector Olson, Conservationist and others, 1963.

[a]Cropland-tilled for crops including hay and pasture.

[b]Pasture-land in grass used primarily for grazing.

[c]Woodland-areas dominantly covered with tree growth.

[d]Other uses-farmsteads, lanes, schools, churches, cemeteries, idle land, wet land and state owned wildlife areas.

[e]Out of inventory-used for buildings, roads, lagoons, parks and public areas.

The most significant change indicated in Table IX is an estimated increase in crop land of 22,716 acres. This will result from drainage, flood control, plowing night pastures, and removal of some farmsteads. The crop land increase will come from land classed as pasture, woodland and other uses in 1963.

Soil productivity can be maintained on class I and class II land, in Lac qui Parle County, by using a protective cropping system, rough tillage, terraces or contour tillage. Class I land and class II land are described as good productive soil with some problems easily overcome. Crop land acres total 362,635 acres of which 353,201, or 97 percent, are in class I or class II land.

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[17]Conservation Needs Study, op. cit.

[a]A night pasture is an enclosure near the farmstead where dairy cows are kept at night. The pasture provides some forage and the cows are readily available for morning milking.

Table X. Distribution of crop land, Lac qui Parle County Minnesota, 1954 and 1964

Crop	1954 Acres	1964 Acres
Corn	127,500	135,000
Soybeans	75,700	85,300
Oats	67,600	40,400
Flax	49,900	30,600
All Wheat	2,290	11,500
Barley	6,800	400
Hay Crops	31,800	32,800
Alfalfa and alfalfa mixtures		23,000
Sweet corn	153	707
Cucumbers	0	65
Sugar beets	0	1,600

Source: Minnesota Agricultural Statistics, Crop and Livestock Reporting Service, USDA and Minnesota Department of Agriculture, 1955 and 1965.

The significant change in the cropping system is the trend towards high return crops. These crops are corn, soybeans, alfalfa and alfalfa mixtures, plus the more specialized crops of sweet corn, sugar beets and cucumbers.

The full effect of the trend toward high return crops is not reflected in Table X because 75 percent of the farms in Lac qui Parle County participated in the Federal Feed Grain Program in 1964. This had the effect of reducing the land planted to corn by approximately 25 percent.

Buildings

The buildings on a typical farm consist of a dwelling house,

a medium-sized dairy barn, a small poultry house, and a small hog house. Feed and seed are stored in overhead space in the barn, in granary buildings, in temporary corn cribs, or are piled on the ground (hay and straw). Most farms are equipped with some kind of machinery or vehicle storage that is also utilized as a shop and as storage for small tools.

The buildings on most farms would have the capacity to store most of the crops produced, to house a 300 to 500 bird flock of poultry, to farrow 8 to 10 sows, and to house 10 to 12 milk cows and a small number of other cattle. The other cattle are frequently housed in quarters formerly occupied by horses. A description of typical farm buildings is shown in Appendix, Table II.

Livestock Program

An average farm, according to census data, would have small, uneconomical livestock enterprises. This is not to say that the livestock enterprises are medium or large on these typical farms, (Tables VII and VIII). The average number of milk cows per farm was 3.6 and the average number of hogs was 37 in 1959.

In Lac qui Parle County there were 1,187 farms out of 1,912 that reported hogs and pigs on hand at the time of the 1959 census. Farms with less than 25 hogs and pigs numbered 267 and those with more than 99 numbered 199.

There were 1,408 farms reporting cattle and calves in the 1959 census. Less than ten head were reported on 226 farms. Farms with

more than 49 head numbered 154. Farms within the range of 10 to 49 head numbered 1029.

One hundred and twenty farms reported one milk cow. Farms with more than one, but less than ten numbered 483. Four farms reported over 30 milk cows. Milk cows were reported on 922 farms.

Of the 253 flocks of sheep, more than half were less than 25 head. Chickens were reported on 1278 farms of this number, 1032 had flocks of less than 400 birds, 105 farms had less than 50 birds, and four flocks were larger than 3,200.

Machinery and Equipment

The custom hire of one or more crop harvesting operations is practiced by farm managers in Lac qui Parle County. Most farms are equipped with a corn picker and grain combine, while a smaller number own pick-up balers and field forage harvesters as indicated in Table XI.

Table XI. The percent of farms having specified harvesting equipment, Lac qui Parle County, 1964

Selected Farm Equipment, 1964	Number	Percent of all Farms
Corn pickers	1,349	80
Grain combines	1,340	80
Pick-up balers	612	36
Field forage harvesters	285	17

Source: U. S. Census of Agriculture, Preliminary, op. cit.,

A list of farm machinery and equipment found on farms of 230 to 249 and 250 to 499 acres in size was derived from a local survey in 1961 (see Appendix, Tables IX and X). This list of general farm machinery is the machinery inventory for the typical farms as well as the beginning inventory of the eight budgets estimated in this study.

Labor

On a typical diversified farm, such as the two studied, more labor can be utilized than on a crop farm because labor is more uniformly distributed throughout the year. With normal distribution a farm operator can provide about 3,000 hours of labor per year. By working longer days and on holidays and using labor saving devices, the farmer can increase his labor contribution. No special labor saving equipment is assumed for the 240 and 400 acre farms in this study (Table XII).

For 1,783 farms reporting in Lac qui Parle County in 1959, there were 1,778 farm operators, 135 regular hired workers (126 in 1964), and 977 unpaid members of operators' families working 15 hours or more per week.[18]

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[18] U. S. Census, op. cit., Tables 6 and 7

Table XII. Estimated Labor Requirements by Enterprise for 240 and 400 Acre Farms

Enterprise	240 Acres Hours	400 Acres Hours
Milk cow and replacement, per year	115	115
Hogs, litter	25	25
Feeder, head	16.5	16.5
Poultry, 100 hens	210	210
Corn, acre	5.5	4
Diverted, acre	1	1
Soybeans, acre	3	3
Corn silage and haylage, acre	7	7
Hay, acre	6.5	6.5
Small grain, acre	2.5	2.5

Source: Interview, Aanderud, Wallace, G., Extension Economist, Farm Management, South Dakota State University, Brookings, South Dakota, and Paul Hasbargen, Extension Farm Management Specialist, University of Minnesota, St. Paul, Minnesota, June, 1965.

It is estimated that a typical farm would have the operator's 3,000 hours of labor plus about 600 hours of labor provided by family members, making 3,600 hours of available labor.

> "The family farm unit organized, for the most part, around a labor force of one to two men seems destined to remain the predominant type of farm in American agriculture in the foreseeable future...
>
> Fully three-fourths of the labor used in farming is presently furnished by the farm operator and members of his family. The latter source is becoming less important. Much of the small amount of labor that is available for hire comes in chunks of a full man year. This is especially true of experienced livestock men. Then an additional man is hired, a major reorganization of the farm business is often necessary to provide him with productive employment. Also, hired labor ordinarily means that th the managerial responsibilities must be shared to

some extent with persons less capable than the farm operator."[19]

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[19]Van Arsdall, Roy, Labor Requirements in Design, and Analysis of Hog Production Systems, Farm Economics Division, Economic Research Service, USDA, University of Illinois, Urbana, Illinois, Paper No. 61-933, 1961.

CHAPTER III.

ALTERNATIVE METHODS OF ORGANIZING THE FARMS STUDIED

In an attempt to utilize the limited resources of land and labor, a farm manager has many choices in selecting a combination of crop and livestock enterprises that will meet his family goals. Economic considerations in enterprise selection to obtain maximum returns are soil productivity, profitable livestock enterprises, improved production methods, and careful management of capital.

Alternative Cropping Systems

A limited number of high return crops is available to Lac qui Parle County farmers. The number of profitable crop choices is somewhat wider. Corn, soybeans, alfalfa and alfalfa-brome are considered the high return crops. They are competitive with one another. Soybeans and alfalfa are complementary to corn and brome. All three crops can be utilized as forage, while corn and soybean grain can be used as feed or readily marketed as grain. It is recognized that less profitable crops such as oats, flax, or wheat may be grown as a nurse crop.

Soil erosion is estimated to be adequately controlled with a combination of water and soil conservation practices. A protective cropping system, rough tillage, terraces, and contour tillage are soil conservation practices that will maintain 97 percent of the cropland.

High crop yields that result from heavy application of fertilizer contribute large amounts of crop residues that serve to

increase the soil's water-holding capacity and reduce water run-off

No special crop rotation is planned for the farms in this study. The cropping systems consist of corn and soybeans on the majority of the crop acres. Some of the land is devoted to alfalfa-brome as a source of forage. Smaller acreages are planted to flax and oats to provide a nurse crop and to help give a more favorable distribution of labor. The land use for budgets prepared in this study is described in Table XIII.

Long term corn yields are estimated at 70 bushels per acre, soybeans at 25 bushels, flax at 15 bushels, oats at 55 bushels, alfalfa-brome at 3 ton per acre. Alfalfa-brome pasture is estimated to produce 7.5 animal units per month and oats pasture four animal units per month.

The present government feed grain program will tend to reduce income if the "projected corn yield" is less than the actual production per acre. The present Lac qui Parle County average "projected corn yield" is 60 bushels per acre.

The total production of crops was determined by combining the estimated yeild with the acreage shown in Table XIII.

Alternative Livestock Systems

The alternative livestock systems that farm managers may select cover a wide range. Dry lot feeding of cattle and dry lot feeding of hogs with a limited use of pasture were selected as livestock enterprises. These livestock enterprises are well

adapted to utilizing corn and hay. Corn, soybeans, and alfalfa-brome hay are the most profitable choices for land use.

Four alternative livestock systems were budgeted on farms of two different sizes. A comparative summary of livestock organizations used in this study is shown in Table XIV. All surplus grain and hay would be sold for cash. The income from the sale of stags plus the breeding fees would pay for boar replacements.

Livestock systems and change in investment on farms 240 acres in size follow. The change in investment represents buildings and equipment that are additions to the normal set of farm buildings and equipment. For a list of normal buildings and equipment see Appendix Tables II, X and XI.

Table XIII. Comparative Summary of Land Use

Plan	Typical 67* Dairy, Beef and Poultry	A-1 91* Cattle Feeding and Hogs	B-1 87* Cattle Feeding (calves)	C-1 69* Beef Cow and Hogs	D-1 95* Cash Crop	Typical 65* Cattle Feeding	A-2 94* Cattle Feeding and Hogs	B-2 92* Cattle Feeding (year-lings)	C-2 81* Beef Cow and Hogs	D-2 97* Cash Crop
Land Use					(Acres)					
Corn	54	140	121.5	101.5	130	150	200	226	200	240
Soybeans	60	50		20	80	150	140	100	71.5	120
Oats	40	20	28.5	27		40	20	27	27	
Flax					10					10
Diverted Acres	26									
Alfalfa-Brome Hay		20	80	37.5	10	20	20	27	37.5	10
Tame Pasture & Hay	10			44					44	
Native Hay & Pasture	20					20				
Farmstead & Roads	10	10	10	10	10	20	20	20	20	20
Waste	10	—	—	—	—	10	—	—	—	—
Total Land in Farm	240	240	240	240	240	400	400	400	400	400

*These numbers represent the percentage of cropland in high return crops. High return crops are corn, soybeans, alfalfa and alfalfa-brome.

Table XIV. Comparative Summary of Livestock Organization

Plan	Typical 240 Acres Dairy, Beef and Poultry	A-1 240 Acres Cattle Feeding and Hogs	B-1 240 Acres Cattle Feeding (calves)	C-1 240 Acres Beef Cow and Hogs	D-1 240 Acres Cash Crop	Typical 400 Acres Cattle Feeding	A-2 400 Acres Cattle Feeding and Hogs	B-2 400 Acres Cattle Feeding (yearlings)	C-2 400 Acres Beef Cow and Hogs	D-2 400 Acres Cash Crop
Cattle				(Number of Head)						
Bulls				1					1	
Beef Cows				40					40	
Feeders, beef, yearlings				28				200	28	
Feeders, beef calves	9	60	200	28		50	38		28	
Dairy cows	10									
Feeders, dairy	5									
Replacements, dairy	5									
Hogs				(Number of Head)						
Market hogs	60	350		350			468		350	
Sows	8	25		25			36		25	
Boars	1	2		2			2		2	
Laying hens	200									

A-1 Cattle feeding and hog raising.

In this system 25 litters of hogs would be farrowed twice a year. Total production would be 375 hogs. Twenty-five gilts would be taken from the herd for breeding once a year. Three hundred and fifty market hogs would be sold at 225 pounds per hog, plus 25 sows at 400 pounds. Sixty fall-purchased calves, weighing 450 pounds, would be fed to a market weight of 1,050 pounds and sold in August. Livestock enterprise budgets are shown in Appendix XI.

New investments to carry out this system would include a pole barn, fences, and necessary material to remodel and repair present buildings. Livestock space requirements are shown in Appendix Table XII. New equipment would consist of feed bunks, hog self-feeders, and waterers. The estimated cost of the new investment would be $6,000.

B-1 Cattle feeding.

Calves weighing 450 pounds would be purchased in the fall to be fed 10 months and sold in August at 1,050 pounds.

New investments would include a trench silo, upright silo, silo unloader, feed bunks, gravel, self-unloading wagon, feed room, pole barn, waterer, electric service, concrete, and remodeling of the old barn. The estimated amount of the new investments would be $23,000.

C-1 Beef and hog raising.

A herd of 40 beef cows would calve in May. Six replacement

heifers would be witheld annually. All other beef would be sold for slaughter at market weights. Twenty-five litters of hogs would be farrowed twice a year producing 375 hogs. Twenty-five sows and 350 market hogs would be sold at 400 pounds and 225 pounds respectively.

The new investment is similar to budget A-1 and would cost an estimated $6,000.

D-1 Cash crop.

Corn and soybeans occupy 210 acres. The hay from 10 acres of alfalfa-brome hay is sold for cash. Ten acres of flax is used as a nurse crop.

The normal buildings and equipment are adequate.

FOUR SIMILAR BUDGETS ARE DESCRIBED BELOW FOR 400 ACRE FARMS

A-2 Beef feeding and hog raising.

In this system 18 sows are farrowed four times per year. They will produce 504 hogs that will be sold as 468 market hogs weighing 225 pounds and 36 sows weighing 400 pounds. Calves numbering 38 and weighing 450 pounds will be purchased in the fall, fed eleven months on the farm, and sold in August weighing 1,050 pounds.

The estimated cost of new equipment, buildings, remodeling, and repair will be $11,000.

B-2 Beef feeding and cash crop.

This system embraces 200 calves weighing 650 pounds, purchased in late fall, fed eight months on the farm, and sold weighing 1,050

pounds in August.

The cost of new buildings, equipment, remodeling, and repairs is estimated at $20,000.

C-2 Beef and hog raising.

A herd of 40 beef cows would calve in May. Six replacement heifers would be witheld annually. All other beef would be sold at slaughter weights. Twenty-five litters of hogs would be farrowed each year. Twenty-five sows at 400 pounds and 350 market hogs at 225 pounds would be marketed.

The new investment is similar to A-1 and C-1 and would cost an estimated $6,000.

D-2 Cash crop.

A total of 360 acres is devoted to corn and soybeans in this plan. The hay from ten acres of alfalfa-brome will be sold for cash. Ten acres of flax will serve as a nurse crop.

New investment in three dryer-bins for corn with a capacity of 15,600 bushels is an estimated $11,000.

The estimated investment in new equipment is not fully reflected in the total investment indicated in Table XV. Table XV is a comparative summary of investment, income, and expenses for the ten budgets used in this study. The estimated value of the 240 acre farms in this study was $166[20] per acre or $40,000 per farm. The estimated

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[20]Interview with Donald Emerson, Supervisor of Assessors, Lac qui Parle County, Minnesota, June 28, 1965.

value of the 400 acre farm was $166 per acre or $65,000 per farm. The estimated value of the buildings in each case was $10,000.

The organization of the farms described here does not exhaust the possible alternative organizations that Lac qui Parle County farmers may choose. Within each alternative, additional investment in equipment could prove economical. Shifting beef cow herd production facilities to the production of sheep or hogs is an example of a possible change in organization. Operating statements for the eight farms studied are in Appendix Tables XIII to XX.

Some of the systems would allow seasonal off-farm employment. For example, a 240 acre crop farm would have approximately 1,200 hours of surplus operator's labor. Selling goods or services to other farmers is an alternate use of this resource. Table XVI describes the total labor requirements by enterprises for which budgets were prepared.

The size of livestock enterprises was determined by the amount of feed produced and the best combination of all old and new facilities on each farm. Roughage consuming livestock are not included in all budgets. Estimated yields will produce more than enough feed for the livestock enterprises and allow some cash sale of crops in all systems. Farm-produced grain and hay would allow for increased size of livestock enterprises in most cases.

Cost and Returns

Detailed receipts, expenses, and labor-management returns

Table XV. Comparative Summary of the Ten Budgets Used in this Study

Plan	Typical 240 Acres Dairy, Beef and Poultry	A-1 240 Acres Cattle Feeding and Hogs	B-1 240 Acres Cattle Feeding (calves)	C-1 240 Acres Beef Cows and Hogs	D-1 240 Acres Cash Crops	Typical 400 Acres Cattle Feeding	A-2 400 Acres Cattle Feeding and Hogs	B-2 400 Acres Cattle Feeding (year-lings)	C-2 400 Acres Beef Cow and Hogs	D-2 400 Acres Cash Crop
Investments					(Dollars)					
Land	30,000	30,000	30,000	30,000	30,000	55,000	56,500	56,500	56,500	56,500
Buildings	10,000	15,000	20,000	15,000	10,000	10,000	19,500	24,500	19,500	16,000
Machinery and Equipment	7,100	9,287	13,445	10,445	9,315	11,225	17,179	17,840	17,170	17,090
Livestock	5,700	10,445	22,250	12,000		5,625	11,400	30,000	12,000	
Total	52,800	64,732	85,695	67,445	49,315	81,850	103,679	128,840	105,170	89,590
Income					(Dollars)					
Crops	6,303	4,257	1,565	1,871	14,440	14,550	12,597	11,507	11,662	24,390
Work Off the Farm					600					500
Livestock	9,376	26,788	46,200	21,088		11,550	27,134	50,600	20,188	
Total	15,679	31,045	47,765	22,959	15,040	26,100	39,731	62,107	31,850	24,890

Table XV. (con't)

Plan	Typical 240 Acres Dairy, Beef and Poultry	A-1 240 Acres Cattle Feeding and Hogs	B-1 240 Acres Cattle Feeding (calves)	C-1 240 Acres Beef Cows and Hogs	D-1 240 Acres Cash Crop	Typical 400 Acres Cattle Feeding	A-2 400 Acres Cattle Feeding and Hogs	B-2 400 Acres Cattle Feeding (yearlings)	C-2 400 Acres Beef Cow and Hogs	D-2 400 Acres Cash Crop
Expense					(Dollars)					
Operating Expense	6,421	18,131	33,526	10,796	5,432	13,148	20,889	43,216	14,387	9,361
Fixed Expense	3,910	5,000	6,833	5,143	4,071	6,736	8,688	9,644	8,073	8,234
Total	10,331	23,211	40,359	15,839	9,503	19,884	29,577	52,860	22,460	17,595
Labor-Management-Income	5,348	8,832	7,406	7,020	5,537	6,616	10,514	9,247	9,390	9,295

Table XVI. Comparative Summary of Labor Requirements by Enterprise

Plan	Typical 240 Acres Dairy, Beef and Poultry	A-1 240 Acres Cattle Feeding and Hogs	B-1 240 Acres Cattle Feeding (calves)	C-1 240 Acres Beef Cow and Hogs	D-1 240 Acres Cash Crop	Typical 400 Acres Cattle Feeding	A-2 400 Acres Cattle Feeding and Hogs	B-2 400 Acres Cattle Feeding (year-lings)	C-2 400 Acres Beef Cow and Hogs	D-2 400 Acres Cash Crop
Enterprise					(Hours)					
Corn	253	735	417	532	632	787	800	768	800	960
Soybeans	180	150		60		450	425	300	214	360
Oats	100	50		43	240	90	50	67	43	
Flax	70				25					25
Silage	52		536					238		
Hay		130	560	262	65	260	130	175	243	65
Diverted	36									
Hogs	250	822		825			1,188	100	825	
Cattle, beef	231	540	635	1,040		500	297	635	1,040	
Dairy	1,150									
Poultry	735									
Work off the farm					400					400
Overhead labor	545	545	545	545	400	790	790	850	790	520
Total hours	3,602	2,972	2,693	3,307	1,812	2,877	3,677	3,033	3,955	2,330

are shown in Appendix Tables XI through XX. Farm intensification has given rise to higher total and hourly labor management returns on the eight model farms than on the two typical farms.

Steps toward intensification include near maximum use of available labor and the utilization of some labor saving equipment.

Maximum grain and forage production was encouraged by using near optimum fertilizer levels, improved crop varieties, and modern weed control methods. The proportion of crop land devoted to high-return crops was increased from 67 percent to 88 percent.

Specialized hog and beef enterprises were applied to the model farms. Livestock feeding and marketing are programmed to maximize livestock returns.

New technology will be introduced through the use of commercial feeds, adapted seed varieties, fertilizer, crop chemicals, machinery and equipment.

The optimum use of these quality inputs may adversly affect the operating costs but are expected to provide a greater margin than another bundle of inputs at less cost.

Machinery and Equipment

Existing farm machinery was considered adequate to operate the typical farms and the eight estimated budgets with three exceptions. A self-unloading wagon was added to systems B-1 and B-2. A picker sheller was added to the D-2 budget. Other changes were described on pages 36-38. A list of general farm machinery found on farms in

Lac qui Parle County is shown in Appendix Table IX and Table X.

Prices Used in Estimating Costs and Returns

Prices used in this study to determine the income and expenses of the alternative crop and livestock organizations are derived from long term planning prices currently in use by the Institute of Agriculture, St. Paul, Minnesota, and South Dakota State University, Brookings, South Dakota.[21]

The price level of commodities may vary from year to year. The prices used are not a prediction of future prices but represent a historical relationship that is estimated to exist in the long-run. Shifts in supply and demand or the adoption of new technology may disturb this relationship.

Comparative Returns of the Alternative Organizations

A farm manager and his family will have to weigh each alternative organization and decide upon a course of action that will best meet their needs and desires. Family needs and desires to be considered are related to income, security, labor, leisure, personal preference, and approval by neighbors. Each family will likely weigh differently expected income, risk, and labor load within the framework of their value system, financial position, and position in life cycle.

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[21]A list of prices used is shown in Appendix Table IV.

Income

The choice, based on the primary goal of the family, will not be difficult. If it is income, the best choices are systems A-1 and A-2, which have the highest incomes.

These systems place emphasis on a large hog enterprise and a relatively small beef enterprise. Investment, income, costs, labor requirements, and returns per hour of labor for the ten budgets are described in Tables XV and XVI.

Labor Requirements

The labor supply is estimated to be the critical factor of production in this study. Labor requirements and family income are not directly related to one another in the budgets prepared. The highest income budgets are A-1 and A-2, but they do not have the highest labor requirements. Crop farming programs illustrated by budgets D-1 and D-2 have the lowest labor requirements and income but have the highest return per hour of labor.

The level of achievement decided upon by the farm operator and his family may be the deciding factor in selecting a long-term plan. Labor requirements for some budgets may not fully utilize available family labor, and others may exceed the family labor supply. If the farm manager wants to fully utilize family labor, his choices would be budgets A-2 or C-2, which require 3,677 and 3,955 hours respectively. It is estimated that 3,600 hours of labor can be furnished annually by a farm family. Budget C-2 may require some

hired labor depending on the willingness of the family to accept this level of achievement. For the labor distribution by enterprises and total labor requirements for the budgets prepared, see Table XVI.

Varying amounts of surplus operator and family labor would be available under the other six systems. This gives the manager several choices. He could increase leisure time or expand the business by enlarging present livestock enterprises, adding other types of livestock enterprise, adding more cropland, or supplementing income with work off the farm. Labor requirements by months are graphically illustrated in Figures 1-8.

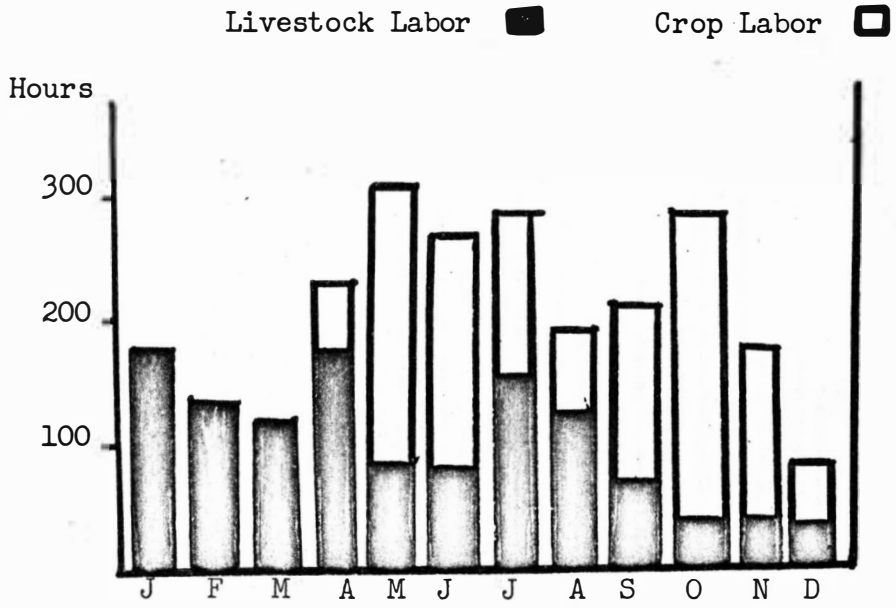

Figure I. Estimated Labor Distribution for Livestock and Crop Enterprises by month for Budget A-1. Overhead labor not included. Total hours of livestock labor is 1,362 hours. Total hours of crop labor is 1,065 hours.

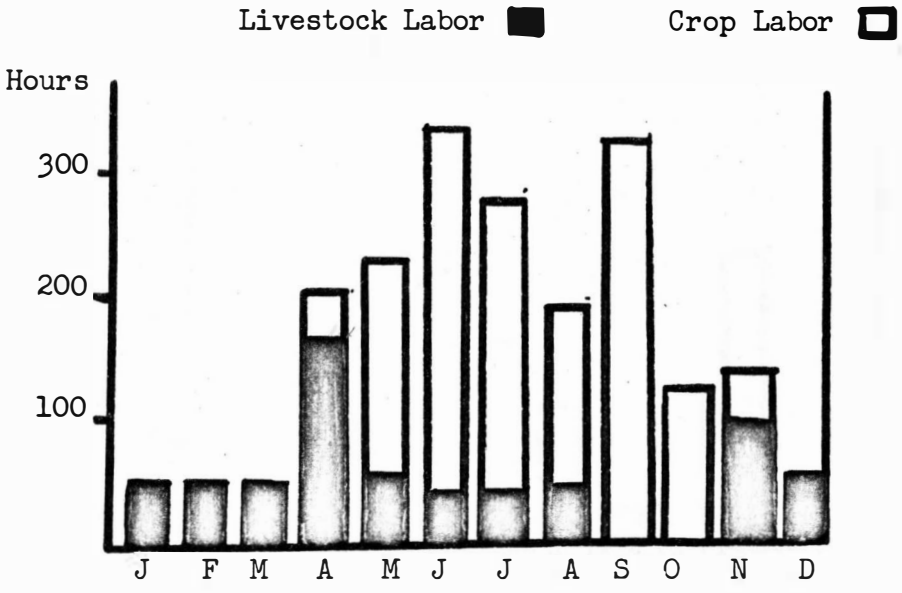

Figure II. Estimated Labor Distribution for Livestock and Crop Enterprises by month for Budget B-1. Overhead labor not included. Total hours of livestock labor is 635 hours. Total hours of crop labor is 1,513 hours.

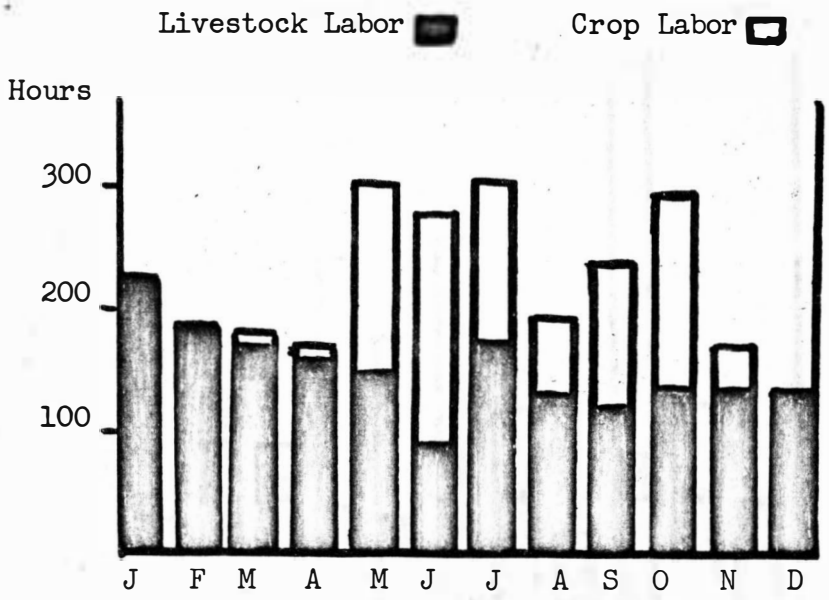

Figure III. Estimated Labor Distribution for Livestock and Crop Enterprises by month for Budget C-1. Overhead not included. Total hours of livestock labor is 1,865 hours. Total hours of crop labor is 897 hours.

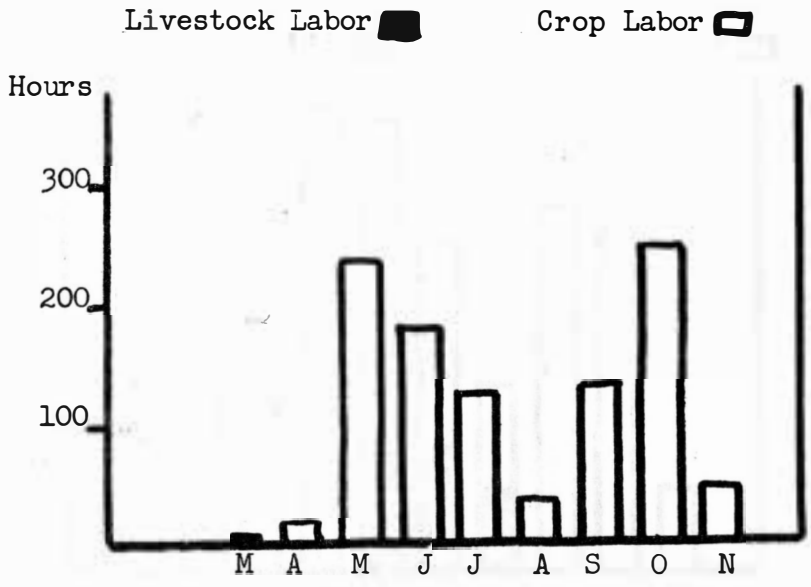

Figure IV. Estimated Labor Distribution for Livestock and Crop Enterprises by month for Budget D-1. Overhead Labor not included. Total hours of crop labor is 1,012.

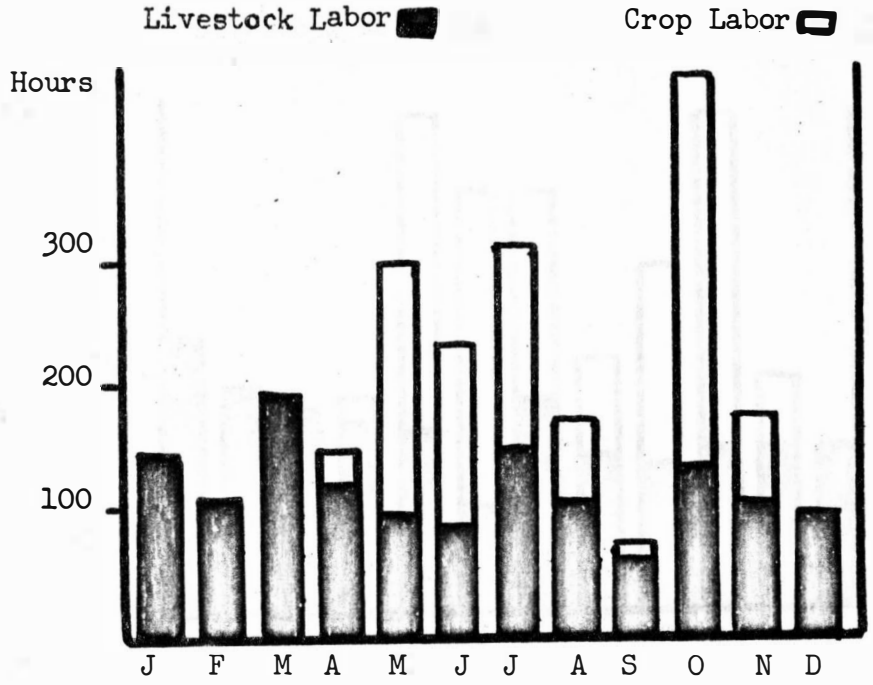

Figure V. Estimated Labor Distribution for Livestock and Crop Enterprises by month for Budget A-2. Overhead not included. Total hours of livestock labor is 1,485. Total hours of crop labor is 1,405.

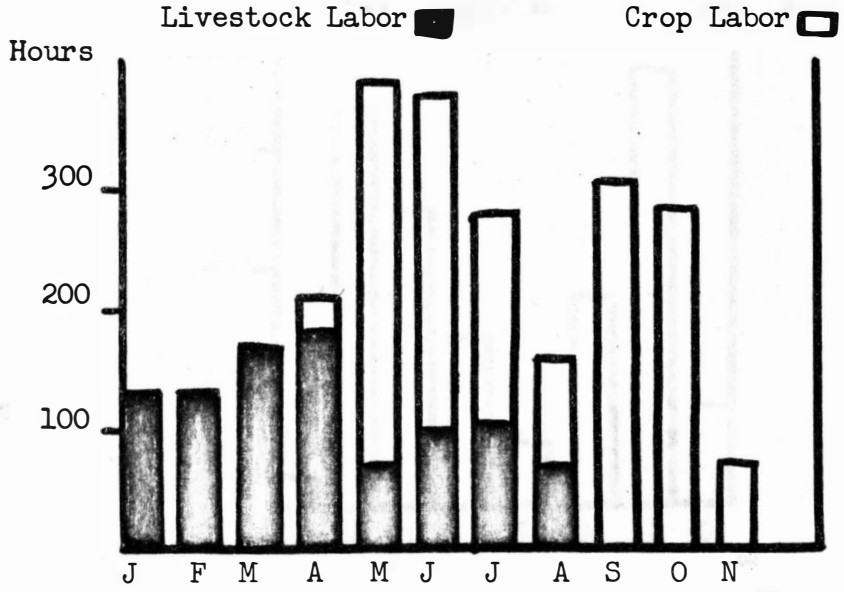

Figure VI. Estimated Labor Distribution for Livestock and Crop Enterprises by month for Budget B-2. Overhead not included. Total hours of livestock labor is 735. Total hours of crop labor is 1,548.

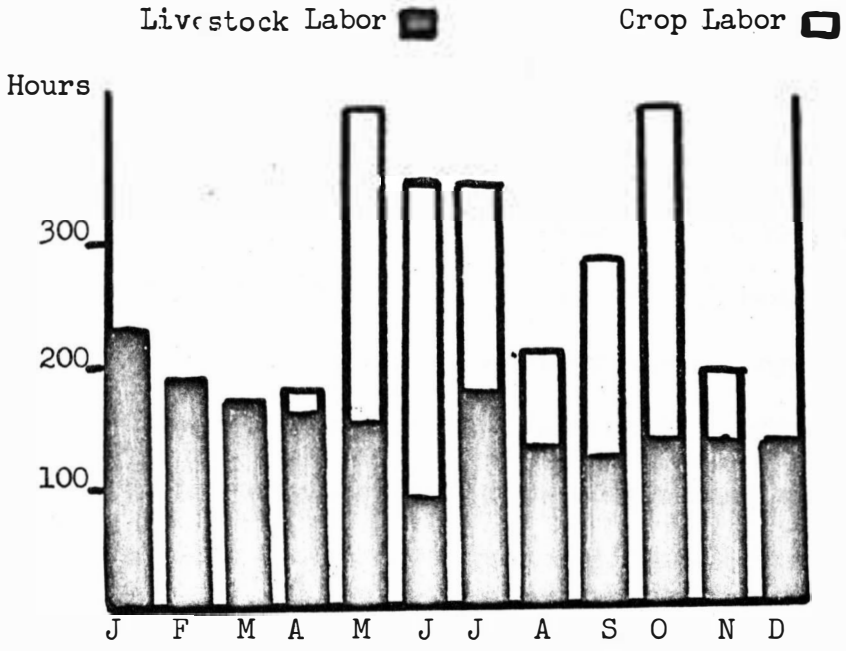

Figure VII. Estimated Labor Distribution for Livestock and Crop Enterprises by Month for Budget C-2. Overhead not included. Total hours of livestock labor is 1,865. Total hours of crop labor is 1,300.

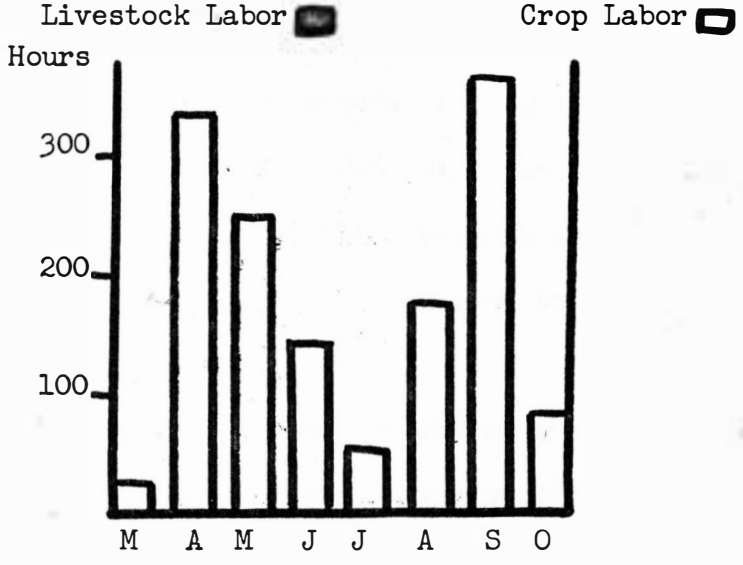

Figure VIII. Estimated Labor Distribution for Livestock and Crop Enterprises by month for Budget D-2. Overhead not included. Total hours of crop labor is 1,410.

Risk

Risk is closely related to investment and income and can be substantially reduced by utilizing insurance and recently developed futures markets. The eight synthetic budgets in this study have a higher investment and income than the two typical budgets.

Crop losses due to weather can be minimized by purchasing Federal Crop Insurance and crop hail insurance. Unfavorable fluctuations in the prices of slaughter weight hogs and cattle can be partially avoided by selling expected production on the cattle and hog futures markets.

Implementing the New Organization

After fitting family goals to income, labor, risk, and capital requirements, management decisions will play a major role in the success of the long-run plan. Short-term planning must be done in such a way as to provide for immediate needs while making progress toward the long-term objectives. Setting priorities relative to the family spending pattern and production program will reduce the cost of transferring from the present organization to the new plan over a three to five year period.

The long-run success of the organization selected will depend on near maximum production of high quality produce, advantageously marketed, combined with minimum production costs.

CHAPTER IV.

PROJECTIONS

By 1976 the number of farms in Lac qui Parle County will have decreased by 30 percent or 500 farms from the present 1,676 farms at the present trend of 2.6 percent per year based on the 1959 and 1964 census reports. This decrease in farm numbers would change the average sized farm from 284 to 370 acres. A projected farm size of 370 acres may prove to be conservative in the light of projections by Daly, Heady and Tweeten. Their Projections assumed adequate off-farm opportunity for employment for all workers leaving the farms.

> "....He predicts 2,083,000 farms for 1980, but also states that 625,000 farms could produce the 1980 output with 2 million workers..."[a]

> "....Other predictions indicate an expected number of farms by 1980 of 1.5 million, but as few as 1.1 million of these farms could easily produce the nations' food and in surplus quantity...."[b]

The total number of farms in the United States in 1963 was 3.5 million.

Present trends in farm size are described in Table XVIII.

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[a]Daly, R. F., "Agriculture in the Years Ahead", U. S. Department of Agriculture, Mimeographed, February, 1964.[22]

[b]Heady, Earl O., and Tweeten, Luther G., Resource Demand and Structure in the Agricultural Industry, Iowa State University Press, Ames, 1963, pp. A80-A81.[22]

[22]Structural Changes in Commercial Agriculture, Proceedings of A Conference Held in Chicago, Illinois, April 12-14, 1965, Sponsored by the Center for Agricultural and Economic Development, Iowa State University.

Table XVII. Percent of Change in Farms in Lac qui Parle County and Minnesota, 1945-1964

	Lac qui Parle County		Minnesota	
	Number of Farms	Percent of Change in Previous Time Period	Number of Farms	Percent of Change in Previous Time Period
1945	2,065		118,950	
1950	2,061	.2	179,101	5.2
1954	1,970	4.4	165,225	7.7
1959	1,912	3	145,662	11.8
1964	1,676	13	131,163	9.9

Source: U. S. Census of Agriculture, op. cit.

Current trends in the number of farms in Lac qui Parle County, as indicated by the 1959 and 1964 census, are that small farms of less than 260 acres are decreasing, and that farms of 260 acres or more are increasing (Table II).

Labor to operate Lac qui Parle County farms will come largely from the farm operator supplemented by custom-hired equipment during the next decade (Table V). Regular hired workers will contribute less to the farm business in the future. The number of regular hired workers was reduced by six percent between 1959 and 1964.

> Because of the scarcity of competent farm workers and increasing wage rates, farmers have attempted to cut costs by reducing the use of labor and by using larger more efficient machines. The average farm tractor purchased now has a maximum belt horsepower of 55. Ten years ago, the average new tractor had approximately 32 horsepower.

Also higher capacity combines, balers, windrowers, and sprayers are much more commonly used than before."[23]

The total investment in the farm business will increase on the average of 250 percent or more by 1976. The increasing value of land and equipment and the increased amount of land and equipment per acre will largely account for the change. Table XVIII indicates that the value of capital in farm firms representative of the area studied has increased more than four fold since 1940.

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[23] Anderson, Arthur W., "South Dakota Economics News Letter", South Dakota State University, Brookings, South Dakota, June 1963.

Table XVIII. Value of Capital per Farm, Specified Types of Commercial Family-operated Farms, United States, 1940 and 1963

Type of Farm	Average Value 1940[a]	Average Value 1963[b]	1963 as a Percent of 1940
	(Dollars)		(Percent)
Dairy farms, Central Northeast			
Total farm capital, January 1	9,900	43,400	438
Land and buildings	5,300	23,400	442
Livestock and equipment	3,600	7,900	219
Hog-beef fattening farms, Corn Belt:			
Total farm capital, January 1	20,640	98,920	479
Land and buildings	14,220	66,070	465
Livestock and equipment	4,620	8,380	181
Cash-grain, Corn Belt:			
Total farm capital, January 1	29,730	137,020	461
Land and buildings	26,250	124,560	475
Livestock and equipment	2,850	8,000	281

[a]Source: Costs and Returns on Commercial Farms, Long-Term Study, 1930-1957, FED, ERS, USDA, Statistical Bulletin No. 297, December 1961.

[b]Source: Farm Costs and Returns, ERS, USDA, Agricultural information Bulletin No. 230, (Revised June 1964) and (revised October 1962).

Source: Structural Changes in Commercial Agriculture, Proceedings of a Conference held in Chicago, Illinois, April, 1965.

Farm production input changes will accompany the above increases in farm size, and investment. The shift to lower labor requirements per unit of output will be one of them.

> "During the past ten year period since 1950-52, total man hours of farm labor have decreased one-third. Labor comprised 39 percent of all farm inputs ten years ago,

compared with only 26 percent in 1960-62....[24]

A higher percent of farm inputs will include fertilizer, herbicides, commercial feeds, livestock, power and machinery.

Custom work by dealer owned equipment will supplement farm labor and equipment needs. Dealers have added two seed processing plants, three stationery feed manufacturing plants, two portable feed grinding and mixing mills and four fertilizer plants in the past ten years. A major portion of fertilizer and weed chemicals were applied by dealer owned or dealer owned and operated equipment in 1965 as compared to about 10 percent in 1955.

Some specialization will reduce the number of enterprises per farm at the same time increasing the total amount of output (Appendix, Table I). Due to climate and some marketing disadvantages, hogs, beef, soybeans and corn will likely continue to be the major farm products in Lac qui Parle County. The critical market disadvantage is distance to markets. A comparatively short growing season, moderate annual rainfall, and low winter temperatures represent our climatic limitations.

The alternate use of land for corn as a cash crop has historically maintained the cost of a beef feeder calf at or above the purchase price of available stock. Consequently, commercial beef cow herds are not likely to increase rapidly. Limited labor supplies will preclude sizable dairy and poultry enterprises on most farms.

Anderson, op. cit.

Farmers who are aware of these trends and have planned to adjust to them, will more successfully fit into the community of 1976 than those that do not. Farmers whose plans for expansion are inadequate or those who are using up their resources for family living should be made aware of the future demands for income from their farm business. To withdraw present resources from agriculture and to use them to create family earning power in some other occupations would be the profitable alternative for some farm families.

The responsibility for disseminating and bringing about the application of this information rests no less with the Agricultural Extension Service than any other social institution or governmental agency.[25]

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[25] "The basic job of the cooperative Extension Service is to help people identify and solve problems related to their businesses, their homes, and their communities, through use of research findings of their state universities, other educational institutions, and various government and private agencies." Luther J. Pickrel, Director, Agricultural Extension Service, St. Paul, Minnesota, February 24, 1966.

Obstacles to Adoption

To determine the obstacles to adoption of the more profitable plans, three farmers and one Farmers Home Administration County Supervisor were interviewed. They were asked the question "Why don't farmers expand their present farm business to increase their incomes?" They were asked to exclude those farmers that have recently made a major expansion in their business.

Their replies are summarized into five groups. These groupings are: economic; lack of opportunity; public opinion, ideas and beliefs; and wants.

Economic reasons were centered around the lack of capital for expansion combined with a desire for secruity as opposed to the high cost of land and equipment required for expansion. Some farm managers do not need higher incomes.

> "Elderly farmers seem to be somewhat less inclined to adopt new farm practices than younger ones....Very practical considerations of health, declining energies, and pending retirement may dictate actions not in accord with maximization of income and profit."[26]

The lack of opportunity to rent land, buy land, or hire trained farm labor were indicated as obstacles to adoption. Competition has almost eliminated the opportunity to secure these resources in some communities.

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[26]Lionberger, Herbert, F., Adoption of New Ideas and Practices, The Iowa State University Press, Ames, Iowa, 1962, p. 96.

Public opinion or what others will think affect the rate of change on farms and the adoption of new technology. Some farmers reject the idea of mortgaging presently unencumbered real estate. Some hold the opinion that livestock are not profitable. A conservative attitude toward expansion or increased commitment of resources stems from the uncertainty of future income. Expansion is tempered for some farmers by the desire to do a good job on a small farm.

The lack of desire or motivation may be caused by several reasons. Among them are government programs that tend to replace incentive by assuring farmers a retirement income. The idea that family members want to stay in their present community and do not want to provide room and board for hired help tend to reduce the full use of resources to create income.

> "The search for simple explanations of human behavior has led to insufficient explanation of that behavior. Our concept of economic man leaves a large residue of behavior unexplained....The desires of man are many and the satisfaction of one must be subordinated to the satisfaction of others."[27]

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[27]Wilkening, E. A., and Johnson, Donald, E., "Goals in Farm Decision-Making as Related to Practice Adoption", Research Bulletin 225, University of Wisconsin, Madison, Wisconsin, February, 1961.

Summary and Conclusions

The principal conclusion from this study is that the wise use of capital and labor resources can materially affect the annual returns to those resources.

The highest labor-management income is found in budget A-2. This is the budget that allots the most resources to livestock production and fully utilizes the labor supply.

Budget B-2 has a 6.6 percent higher hourly return than budget A-2 and uses the most capital of the four budgets prepared for farms of 400 acres in size. Budget B-2 requires 17.5 percent less labor than A-2 and returns 12 percent less income. This budget has 600 hours of surplus family labor.

A comparatively low return livestock enterprise--beef cows--is reflected in low hourly return in budget C-2. This budget also has the highest labor requirement.

The other force affecting total income is the intensity of livestock enterprises that provide more employment through a more uniform distribution of labor use throughout the year. Crop farms, illustrated in budgets C-1 and C-2, give the highest hourly return for labor, but the lowest annual return due to several months of underemployment.

Summary comments made here in paragraph one and of this section about budgets A-2, B-2 and C-2 are also applicable to budgets A-1, B-1 and C-1.

The eight budgets in this study have an average of 88 percent of the crop land in high return crops[28] and have a more favorable labor income ratio than do the typical farms in Lac qui Parle County with an average of 67 percent of the crop land in high return crops.

The higher labor-management income indicated in Table XIX enables farmers to expand their farm business. The higher returns on the farms studied are the result of selecting high-return enterprises, adopting improved production methods and adjusting the size of business.

Table XIX. Returns to Labor and Management Per Hour of Labor on the Eight Farm Budgets Prepared for this Study Compared With the Two Typical Farms

Plan of Operation	Total Returns to Labor and Management Per Hour of Labor	
	240 Acres	400 Acres
Typical farm	$1.48	$2.29
Average of the farms in this study	2.74	2.84
Percent of change	85	24

Based on evidence presented in Table II, farm reorganization would increase agricultural income in Lac qui Parle County on 940 farms by an estimated 2.44 million dollars for an aggregate increase

[28]High return crops in this study are corn, soybeans, alfalfa, and alfalfa-brome.

of 16.1 percent. Value of farm products sold in 1959 was $15,073,000.

Table XX. Total returns to Labor and Management on the Eight Farms Studied Compared With the Two Typical Farms

Plan of Operation	Total Labor-Management Income	
	240 Acres	400 Acres
Typical	$5,348	$6,616
Average of farms in this study	7,198	9,111
Change in income	1,850	2,495
Percent of change	34	37

A 34 percent or $1,850 increase in labor-management income would be expected if the reorganization plans used in this study were adopted by the typical 240 acre farm in Lac qui Parle County. There are 232 farms ranging from 220 to 259 acres in size. An average increased income of $1,850 per farm would enlarge the total income for this group of farms by $671,000.

A 37 percent or $2,495 increased labor-management income would be expected if the reorganization plan used in this study were adopted by the typical 400 acre farm in Lac qui Parle County. There are 708 farms ranging from 260 to 499 acres in size. An average increased income of $2,495 per farm would enlarge the total income for this group of farms by $1,765,000.

The effect of farm reorganization on the remaining farms was not considered.

APPENDIX

Table 1. Livestock Population on January 1, of the Years Indicated Lac qui Parle County

Year	Sheep	Cows & Heifers 2 years old and older, kept for milk	Poultry	All Cattle
1946	8,800	14,000	1,000	39,000
1951	6,400	11,500		37,400
1955	5,300	11,200	264	42,800
1959	7,100	10,000	257	39,400
1964	6,100	9,300	170	52,700

Source: Minnesota Agricultural Statistics, Crop and Livestock Reporting Service, USDA, Minnesota Department of Agriculture, St. Paul, Minnesota, 1947, 1952, 1956, 1960 and 1965.

Table 1a. Trend in Number of Pigs Saved, for Lac qui Parle County, Minnesota, 1952-1964

Year	Number of Pigs Saved
1952	94,400
1953	88,100
1954	96,300
1955	103,000
1956	78,600
1957	83,500
1958	95,100
1959	96,200
1960	77,100
1961	96,400
1962	92,200
1963	85,400
1964	79,200

Ibid. 1953-1965.

Table 2. Type, Size, and Condition of the Typical or Average Set of Farm Buildings on Lac qui Parle County Farms, 1963

Buildings	Condition
Dwelling house	Good
Dairy barn - 32 X 48	Good
Hog house - 20 X 30	Good
Poultry house - 16 X 24	Good
Brooder house - 12 X 14	Fair
Lean-to on barn - 16 X 48	Good

Storage	Volume
Corn crip	4,000 bu.
Grain bin in barn	600 bu.
Steel grain bin	1,400 bu.
Hay mow	80 tons

Source: Agricultural Resource Use Survey, Lac qui Parle County, Minnesota, 1962.

Table 3. Requirements and Distribution of Labor for Farm Crops in Southern Minnesota

Month	Oats	Flax	Soybeans	Corn for Grain	Corn for Silage	Alfalfa
	Percentage Distribution by months					
January						
February						
March	.8			.2	.1	.1
April	16.8	6.0	2.0	1.6	1.1	.2
May	10.0	16.2	24.2	25.3	17.2	.5
June	.6	8.1	20.9	15.5	10.5	36.4
July	16.4	5.1	12.4	7.8	5.2	30.8
August	41.6	28.7	2.0	3.1	2.1	14.4
September	6.2	26.1	9.1	12.7	61.0	16.9
October	3.2	6.2	23.6	27.3	2.4	.7
November	4.4	3.6	5.8	6.4	.3	
December				.1	.1	
Total Percent	100.0	100.0	100.0	100.0	100.0	100.0

Note: Based on farm records.

Source: Hasbargen, P. R. and Pond, G. A., "Planning Farms for Increased Profits", Minnesota Agriculture Experiment Station Bulletin 445, December, 1957.

Table 3b. Livestock Labor Requirements, Hours Per Unit of Production, South Dakota

Dairy Cows				
Cows	Stanchioned	Gutter Cleaner and Pipeline	Loose Housing Walk Through	Loose Housing Herringbone
(number)		(Hours per Cow)		
Under 15	115	110	105	105
15 - 30	90	85	82	76
Over 30	80	70	65	58

Beef Cows		
Farm Conditions		
(Number)	Calf Sold	Calf Fed
	(Hours per Head)	
Under 25	25	37
25 - 50	16	26
51 - 80	12	18
Over 80	10	15

Other Cattle			
	Wintering	Summer Pasture	
(Number)	(Hours per Head)	(Number)	(Hours per Head)
Under 40	10	Under 40	3
40-80	5	40-80	2
Over 80	2	Over 80	1

Table 3b. (con't)

Brood Sows

(Number)	1 Litter (Hours per sow)	2 Litters (Hours per sow)
Under 10	30	50
10 - 20	25	42
20 - 30	20	33
30 - 40	15	25
40 - 60	12	20
Over 60	10	16

Livestock Fattening Enterprises
(Hours per Month)

Beef (1)		Pigs (10)	
(Number)	(Hours)	(Number)	(Hours)
Under 40	1.5	Under 40	6
40 - 80	.9	40 - 80	4
80 - 120	.7	80 - 120	3
120 - 200	.5	120 - 160	2
Over 200	.3	Over 160	1

Table 3b. (con't)

Laying Hens			
Farm Flock*		Commercial Flock	
(Number)	(Hours per 100)	(Number)	(Hours per 1,000)
Under 100	240	Under 1,000	1,000
100 - 200	210	1,000 - 2,000	750
200 - 300	180	2,000 - 3,000	600
Over 300	150	Over 3,000**	500

*Includes labor to raise 120 sexed chicks per 100 hens.

**Labor required for a 10,000 bird flock may be less than 200 hours per 1,000 hens when fully mechanized.

Source: Aanderud, Wallace, G., Guidebook for Planning a Farm or Ranch Business, Extension Circular 633, South Dakota State University, Brookings, South Dakota, March 1965.

Table 3c. Labor Requirements for Hogs From Farrowing to Market, by Months, Iowa and South Dakota

Calendar Notes	Month	Hours Per Litter	Number of Animals in Breeding Herd Per Litter	Hours Required Breeding Herd Per Litter	Total for Two Litters Per Year
Farrow to 4 weeks	Jan.	5	1	.4	5.4
Wean 6 to 8 weeks	Feb.	3.2	1	.4	3.6
Sell sows	March	2.2	2	.7	2.9
Breed	April	1.2	1	.7	1.9
	May	1.2	1	.4	1.6
	June	1.2	1	.4	1.6
Farrow to 4 weeks	July	5			5.0
Wean 6 to 8 weeks	Aug.	3.5			3.2
Breed	Sept.	2.2	1	.7	2.9
	Oct.	1.2	1	.4	1.6
	Nov.	1.2	1	.4	1.6
	Dec.	1.2	1	.4	1.6
Total		28.0			

Note: Requirements equal 2.35 hours per 225 pound market hog, or 16.45 hour requirement per 7 pig litter is allowed in this distribution. Boar care labor is included.

Source: The dates presented in Table 3c were derived from three publications: Circular 633, South Dakota; Fact Sheet 278, South Dakota; and Record Bulletin 440, Iowa.

Table 3d. Hours of Labor Used by Feeding Periods, Yearling Steers Fed a Liberal Grain Ration, Southwestern Minnesota.

Periods	Number of head in the lot						
	20	40	60	80	100	120	per 10 added
	Hours per Week						
I. Cornstalk pasture (3 weeks)							
Hay feeding	1.51	1.69	1.86	2.04	2.21	2.38	.087
Care and treatment of sick animals	.05	.05	.05	.05	.05	.05	
Care and observation on cornstalk pasture	1.14	1.14	1.14	1.14	1.14	1.14	
Miscellaneous jobs	.30	.46	.62	.78	.94	1.10	.080
Total per week	3.00	3.34	3.67	4.01	4.34	4.67	.167
Total for 3 weeks	9.00	10.02	11.01	12.03	13.02	14.01	.501
II. Full feed of grain with hay in dry lot (24 weeks)							
Hay feeding	.94	1.12	1.29	1.47	1.64	1.81	.087
Grain feeding	1.44	2.38	3.33	4.27	5.21	6.15	.471
Bedding	.35	.68	1.01	1.34	1.67	2.00	.165
Watering and observation	.72	.72	.72	.72	.72	.72	
Care and treatment of sick animals	.05	.05	.05	.05	.05	.05	
Feed grinding (15 lbs. per head per day)	.92	1.85	2.77	3.70	4.62	5.54	.462
Miscellaneous jobs	.30	.46	.62	.78	.94	1.10	.080
Total per week	4.72	7.26	9.79	12.33	14.85	17.37	1.265
Total for 24 week period	113.28	174.24	234.96	295.92	356.40	416.88	30.360

Table 3d. (con't)

Periods	Number of head in the lot						
	20	40	60	80	100	120	per 10 added
	Hours per Week						
Manure disposal (25 weeks)							
Total per week in lot	1.03	1.18	1.32	1.47	1.61	1.75	.072
Total for 25 weeks	25.75	29.50	33.00	36.75	40.25	43.75	1.800
Buying and selling							
Total for year	15.00	15.00	15.00	15.00	15.00	15.00	
Total labor for 27 weeks	163.03	228.76	293.97	359.70	424.67	489.64	32.661
Total labor per head	8.15	5.72	4.90	4.50	4.25	4.08	

Source: Labor Used in Cattle Feeding, Station Bulletin 451, University of Minnesota Agricultural Experiment Station, March, 1960.

Table 3d. Hours of labor used by Feeding Periods, Heifer Calves Fed a Liberal Grain Ration, Southwestern Minnesota, Farm Management Association, 1956-57

Periods	Number of head in the lot						
	20	40	60	80	100	120	per 10 added
	Hours per Week						
I. Hay and limited grain in dry lot (4 weeks)							
Hay feeding	1.51	1.69	1.86	2.04	2.21	2.38	.087
Grain feeding	1.43	1.67	1.90	2.14	2.37	2.60	.117
Bedding	.35	.68	1.01	1.34	1.67	2.00	.165
Watering and observation	.72	.72	.72	.72	.72	.72	
Care and treatment of sick animals	.12	.12	.12	.12	.12	.12	
Feed grinding (5 lbs. per head per day)	.31	.62	.92	1.23	1.54	1.85	.154
Miscellaneous jobs	.30	.46	.62	.78	.94	1.10	.080
Total per week	4.74	5.96	7.15	8.37	9.57	10.77	.603
Total for 4 weeks	18.96	23.84	28.60	33.48	38.28	43.08	2.412
II. Full feed of silage, limited grain, and hay (10 weeks)							
Hay feeding	.94	1.12	1.29	1.47	1.64	1.81	.087
Grain feeding	1.43	1.67	1.90	2.14	2.37	2.60	.117
Silage feeding	2.52	3.39	4.25	5.12	5.98	6.84	.432
Bedding	.35	.68	1.01	1.34	1.67	2.00	.165
Watering and observation	.72	.72	.72	.72	.72	.72	
Care and treatment of sick animals	.12	.12	.12	.12	.12	.12	
Feed grinding (5 lbs. per head per day)	.31	.62	.92	1.23	1.54	1.85	.145
Miscellaneous jobs	.30	.46	.62	.78	.94	1.10	.080
Total per week	6.69	8.78	10.83	12.92	14.98	17.04	1.035
Total for 10 weeks	66.90	87.80	108.30	129.20	149.80	170.40	10.350

Table 3d. (con't)

Periods	Number of head in the lot: 20	40	60	80	100	120	per 10 added
III. Full feed of grain with hay in dry lot (24 weeks)				Hours per Week			
Hay feeding	.94	1.12	1.29	1.47	1.64	1.81	.087
Grain feeding	1.44	2.38	3.33	4.27	5.21	6.15	.471
Watering and observation	.54	.54	.54	.54	.54	.54	
Care and treatment of sick animals	.12	.12	.12	.12	.12	.12	
Feed grinding (15 lbs. per head per day)	.92	1.85	2.77	3.70	4.62	5.54	
Miscellaneous jobs	.30	.46	.62	.78	.94	1.10	.080
Total per week	4.26	6.47	8.67	10.88	13.07	15.26	1.100
Total for 24 weeks	102.24	155.28	208.08	261.12	313.68	366.24	26.400
Manure disposal (38 weeks)							
Total per week in lot	1.03	1.18	1.32	1.47	1.61	1.75	.072
Total for 38-week period	39.14	44.84	50.16	55.86	61.18	66.50	2.726
Buying and selling							
Total for year	15.00	15.00	15.00	15.00	15.00	15.00	
Total labor for 38-week period	242.24	326.76	410.14	494.66	577.94	661.22	41.898
Total labor per head	12.11	8.17	6.84	6.18	5.78	5.51	

Source: Labor Used in Cattle Feeding, Op. cit.

Table 3c. General Overhead Labor

Size of farm (acres)	Type of farm (hours per year)		
	Grain	Stock	Dairy
Under 260	400	545	495
260-999	520	790	665
Over 999	680	980	750

Note: General overhead labor includes labor on farmstead upkeep, building repair, machinery and equipment repair and service. It also includes time spent in gathering information for marketing and management decisions and keeping farm business records.

Source: Aanderud, Wallace, G., Guidebook for Planning a Farm or Ranch Business, Extension Circular, 633, South Dakota State University, Brookings, South Dakota, March 1965.

Table 4. Assumed Prices for Budgetary Analysis for Lac qui Parle County Farms, 1965

Purchase price of selected farm supplies		
Corn, seed	$12.00	bushel
Soybean, seed	4.00	bushel
Oats, seed	1.50	bushel
Flax, seed	3.00	bushel
Brome, seed, (Canadian)	.25	pound
Alfalfa, seed, (Vernal)	.50	pound
Diazinon	2.45	pound
Phosphate	.10	pound
Nitrogen	.12	pound
Potash	.05	pound
Spreading, spreader rent	.25	acre
2-4, D, amine	.85	pound
MCP, amine	1.83	pound
Atrazine	3.06	pound
Sexed chicks	.40	each
Custom hire		
Spray weeds, w/o chemical	.50	acre
Corn shelling	.03	bushel
Baling	.10	bale
Feed grinding	.10	bushel or .15/100#
On-farm value of feeds		
Protein, supplement, delivered, 40% protein	4.80	cwt
Creep-feed	3.00	cwt
Corn	1.00	bushel
Oats	.55	bushel
Oyster shells	.02	pound
Mineral salt mixture	3.00	cwt
Hay, alfalfa-brome	14.00	ton
Silage, corn, 5 bushel corn/ton	6.50	ton
Silage, alfalfa-brome	4.50	ton
Haylage, alfalfa-brome	9.50	ton
Oats, silage	5.50	ton
Laying mash	4.00	cwt
Chick mash	5.00	cwt

Table 4. (con't)

Interest, depreciation, repairs		
Interest, long term, real estate	5.5%	
Interest, short term, operating capital	7.0%	
Interest, intermediate term, equipment	6.0%	
Depreciation, machinery	10.0%	of inventory
Depreciation, buildings	3.0%	of inventory
Repairs, machinery	4.0%	of inventory
Repairs, buildings	3.5%	of inventory
Market value of livestock and crops		
Slaughter steers, good-choice	1,050 pounds	$ .22/pound
Feeder, calves, good-choice	450 pounds	.25/pound
Hogs, No. 1 & 2, barrows and gilts	225 pounds	.16/pound
Sows		.13/pound
Stags		40.00/head
Milk		2.90/cwt
Dairy, heifer calves		35.00/head
Dairy steers		.18/pound
Cows, dairy cull		150.00/head
Cull pullets		.08/pound
Old hens		.08/pound
Eggs		.25/dozen
Soybeans		2.25/bushel
Flax		3.00/bushel
Cost of other inputs		
Corn combined w/corn head, pick-up and grain head	$9,000.00	list
Concrete floor	.35	sq. ft.
Fence	1.00	ft.
Pole shed	1.25	sq. ft.
Gasoline	.20	gallon

Table 5. Taxes on Land, Machinery and Livestock
Madison Township, Lac qui Parle County,
Minnesota, 1965

Machinery and Livestock	Tax
Tractors, 4 plow	$27.67
Tractors, 3 plow	24.46
Tractors, 3 plow (old)	4.99
Tractors, 2 plow	9.98
Plow, 4 bottom	3.49
Plow, 3 bottom	2.83
Plow, 2 bottom	1.83
Disc, single, 15 ft.	1.66
Disc, tandem, 15 ft.	2.83
Harrow, 5 section, steel	2.00
Trailer, w/box	1.83
Cultivator, 4 row	3.66
Corn planter, 4 row w/check head	3.83
Drill, grain	4.16
Swather, pull, 12 ft.	4.16
Corn picker, 2 row, mtd.	7.82
Combine, pull, 6 ft.	6.49
Elevator	2.66
Mower, tractor, mtd.	1.83
Spreader, manure, 2 whl., 95 bu.	2.16
Dairy calf, 6 months	.67
Heifer, 1-1/2 years	1.33
Dairy cow	2.33
Herd Sires	3.33
Beef cows	2.00
800 # feeder	1.33
1200 # feeder	2.00
Sheep over three months	.16
Hogs over five months	.40
100 chickens	.66

Note: A typical Madison Township farm of 240 acres would have a market value of about $40,000. The real estate tax on this farm would be $641.52, including homestead rights. Madison Township is estimated to have land value and improvements that are representative of Lac qui Parle County. Average age of all machines was assumed to be six years.

Source: Emerson, Donald, Supervisor of Assessors, Courthouse, Madison, Minnesota, County Seat of Lac qui Parle County.

Table 6. Amount of Fuel Needed for Various Operations
Department of Agricultural Economics,
University of Illinois,
Urbana, Illinois

	Fuel--gallons per acre		
	Low	High	Average
Plowing			
Spring--corn and soybean soil	1.80	2.40	2.12
Spring--clover, pasture, oats	2.26	2.72	2.54
Fall--corn and soybean soil	2.10	2.85	2.50
Fall--clover, pasture, oats	1.85	3.23	2.91
Tandem disking			
Stalks for plowing	.45	.77	.58
Plowing soil--first time	.53	.88	.71
Plowed soil--second, third time	.48	.84	.65
Harrowing	.21	.33	.27
Drilling			
Oats and soybeans	.38	.62	.50
Corn planter			
Hill-dropping or drilling	.34	.56	.44
Check rowing	.42	.82	.56
Cultivating corn			
First	.39	.78	.58
Second--crossing	.39	.82	.57
Third	.34	.61	.48
Mowing	.52	.75	.62
Raking	.18	.31	.27
Combining	1.10	2.02	1.45
Corn picking	1.16	2.08	1.53

Note: For most tractors, oil costs are approximately 10 percent of total fuel costs. Grease cost for all power and equipment on the farm is about 3 percent of fuel costs.

Source: Schwart, R. B., Economics for Agriculture, FM 8, Department of Economics, University of Illinois, Urbana, Illinois, 1960

Table 7. Typical Average Rates of Performance, Selected Machine Operations, Department of Agricultural Economics, University of Illinois, Urbana, Illinois

Operation	Size of Implement	Hours per Acre
Plowing	3-14 inches	.80
Plowing	4-14 inches	.62
Plowing	5-14 inches	.52
Plowing	6-14 inches	.45
Disking	8-foot tandem	.33
Disking	10-foot tandem	.28
Disking	12-foot tandem	.25
Harrowing	20 feet	.13
Planting corn	2-row	.45
Planting corn	4-row	.27
Planting corn	6-row	.18
Drilling	8 feet	.37
Drilling	10 feet	.29
Rotary hoeing	2-row	.33
Rotary hoeing	4-row	.18
Rotary hoeing	6-row	.13
Cultivating	2-row	.43
Cultivating	4-row	.27
Cultivating	6-row	.18
Corn picking	1-row	1.11
Corn picking	2-row	.71
Corn picking	4-row	.45
Combining	6 feet	.71
Combining	9 feet	.50
Combining	12 feet	.45
Mowing	7 feet	.45

Source: Schwart, R. B., op. cit.

Table 8. Value of General Farm Machinery on Farms in Lac qui Parle County, Minnesota, 1965

Equipment	Rounded Mean	Equipment	Rounded Mean
Tractors, 4 plow	$2,800	Elevator	$ 225
3 plow	1,300	Mower, tractor	115
3 plow (old)	580	Spreader, manure	150
2 plow	430	Chopper, field	750
Plow, 4 bottom	415	Blower, grain and forage	400
Plow, 3 bottom	150	Manure lift	175
Plow, 2 bottom	35	Snow scoop	75
Disc, 15 ft.	55	Feed grinder	175
Disc, tandem, 15 ft.	665	Trailer hoist	50
Harrow, 5 sect, steel	80	Welder	65
Trailer, w/box	85	Baler	45
Cultivator, 4 row	385	Side rake	75
Corn planter, 4 row	260	Swather, pull	190
Drill, grain	165	Weed sprayer	175
Swather, pull	190	Fertilizer spreader	0
Corn picker, 2 row	385	Automobile	1,150
Combine, pull	665	Pick-up truck	950

Note: This is a summary of a dealers' survey taken June, 1965.

Source: Clifford M. Lund, Madison, Minnesota, Farm Machinery Retail Dealer; Theodore Overby, Madison, Minnesota, Farm Machinery Retail Dealer; H. S. Larson, Madison, Minnesota, Farm Machinery Retail Dealer; Myron Wigen, Madison, Minnesota, Automobile Retail Dealer; Clarence Helmstetter, Madison, Minnesota, Automobile Retail Dealer.

Table 9. General Farm Machinery Used to Operate A Typical 240 Acre Stock Farm in Lac qui Parle County, Minnesota, 1962

Equipment	Number	Equipment	Number
Automobile	1	Grain drill	1
Truck	1	Corn picker	1
Tractors	2	Elevator	1
Trailers	2	Hay rake	1
Plows	2	Mower	1
Disc	1	Manure lift	1
Harrow	1	Manure spreader	1
Cultivator	1	Trailer hoist	1
Planter	1		

Source: Agricultural Resource Use Survey, Lac qui Parle County, Minnesota, 1962. Of the 256 respondents to the survey, 33 were from farms of 230 to 249 acres in size.

Table 10. General Farm Machinery Used to Operate A Typical 360 to 439 Acre Stock Farm in Lac qui Parle County, Minnesota, 1962

Equipment	Number	Equipment	Number
Automobile	1	Corn picker	1
Truck	1	Elevator	1
Tractors	3	Mower	1
Trailers	3	Hay rake	1
Plows	2	Manure spreader	1
Disc	1	Manure lift	1
Harrow	1	Weed sprayer	1
Cultivator, 4 row	1.5	Welder	1
Planter, 4 row	1	Snow scoop	1
Grain drill	1	Trailer hoist	2
Swather	1	Feed grinder	1
Combine	1		

Source: Ibid.

Table 11. Livestock Enterprise Budgets, Selected Expenses and Farm Grower Feed Use

Beef Cow Farm, Calf Fed Out, 16% Replacement Rate
90% Calf Crop, One Bull per 25 Cows

Input	Number	Unit	Unit cost
Corn	38	bushels	$ 1.00
Hay	2.8	Ton	14.00
Pasture	9.3	AUM	
Supplement	2.5	cwt	4.80
Mineral - salt	90	pounds	.03
Breeding charge			5.00
Veterinary and drugs			4.50
Miscellaneous expense			3.75

Full Fed Steer Calf, Drylot, Gain 600 Pounds
in 10 months on Farm

Input	Number	Unit	Unit cost
Steer calf	450	pounds	$ .25
Corn	58	bushels	1.00
Hay	1	ton	14.00
Supplement	3.5	cwt	4.80
Mineral - salt	30	pounds	.03
Veterinary and drugs			2.00
Miscellaneous expense			3.40

Fed Good-choice Yearling Steers, Drylot
Gain 500 Pounds in 7 Months on Farm

Input	Number	Unit	Unit cost
Steer	650	pounds	$ .22
Corn	60	bushels	1.00
Hay	2	tons	14.00
Supplement	2.1	cwt	4.80
Mineral and salt	20	pounds	.03
Veterinary and drugs			2.00
Miscellaneous expense			3.76

Table 11. (con't)

Full Fed Steer Calf, Drylot, Gain 600 Pounds in 275 Days

Input	Number	Unit	Unit cost
Steer calf	450	pounds	$ .25
Corn	20	bushels	1.00
Supplement, soybean meal	2	cwt	5.00
Haylage, alfalfa*	2	ton	9.50
Oat silage	1	ton	5.50
Corn silage	2.5	ton	6.50
Mineral - salt	30	pounds	.03
Veterinary and drugs			2.00
Miscellaneous expense			3.40

*All of the haylage should be fed the last 100 days with 8 pounds of corn and no supplement. Soybean meal should be fed at the rate of 1.25 pounds per day for the first 175 days.

Source: Jacobs, Robert, E., Agricultural Extension Service, St. Paul, Minnesota, July, 1965.

Dairy Cow and Replacement-Manufacturing Milk, 6,500 pounds

Input	Number	Unit	Unit cost
Corn	14	bushels	$ 1.00
Oats	18	bushels	.55
Hay	4.2	ton	14.00
Pasture	6.2	AUM	
Supplement	3.6	cwt	4.80
Mineral - salt	45	pounds	.03
Breeding charge			8.00
Veterinary and drugs			6.00
Miscellaneous			3.49

Table 11. (con't)

Sow and Two Litters; Raising and Finishing Butcher Hogs, Seven Pigs per Litter Raised, January and July Farrowing, One Saved for Replacement from January Litter, Market 225 Pound Butcher Hogs

Input	Number	Unit	Unit cost
Corn	175	bushels	$ 1.00
Oats	35	bushels	.55
Creep ration	400	pounds	.03
Alfalfa	.04	ton	16.00
Pasture	2	AUM	3.00
Supplement	17.5	cwt	4.80
Mineral - salt	135	pounds	.03
Breeding charge			5.00
Veterinary and drugs			11.00
Miscellaneous expense			7.14

Source: Aanderud, Wallace, G., Guidebook for Planning a Farm or Ranch Business, Extension Circular 633, Cooperative Extension Service, South Dakota State University, Brookings, South Dakota, 1965.

Table 12. Space Requirements for Livestock

Swine

Period	Housing sq. ft./hd	Concrete (outside) sq. ft./hd	Feeder Hand hd/ft.	Slef-fed hd/hole
Dry sow	15	none	2	2
Boar	30	none	2	1
Gestation	15	none	2	2
Farrowing pens	48-64	30 (optional)	2	
Farrowing stalls	35	30	2	2
Nursing sow and litter	30	40		1
Growing-40 to 60 pounds	4-6	5-7		5
Finishing-100 to 200 pounds	6 8	7-9		4

Source: "Some Considerations in Intensified Systems of Hog Production", Mimeo ID 19, Purdue University, Lafayette, Indiana, April, 1957.

Dairy Cow, Beef Cow, Feeder and Hen

Housing and Equipment	Dairy Cow	Beef Cow	Feeder	Hen
Loafing shed (sq. ft.)	50-60	30-40	20	1-2
Stanchion (sq. ft.)	75-90			
Yard area (sq. ft.)				
Paved	60-100	50	40	
Unpaved	120-200	150	100-200	3-4
Manger space (inches)	4-24	24	12-24	3-4

Source: Farm Planning Reference Book, FM 50, University of Minnesota, Agricultural Extension Service, January 1964.

Table 13. Summary of Model A-1, 240 Acre Hog and Beef Farm
Lac qui Parle County, Minnesota

Financial Summary

Expenses		Receipts		Inventory Value	
Seed	$ 721	Crops	$ 4,257	Land and Buildings	$45,000
Fertilizer	1,982	Livestock	26,788		
Custom Work	343			Machinery and Equipment	9,287
Machinery repair	425	Total	$31,045		
Fuel, Oil, Lubricant	502			Livestock	10,445
Building repair	325	Less cash expense	18,131		
Taxes, Insurance	1,268				
Crop chemicals	469	Net cash income	$12,914	Inventory Numbers	
Feed	3,562				
Feeder Cattle	6,750	Less depreciation	1,372	Feeder cattle	60
Other	1,784			Sows	25
		Net farm income	$11,540	Boars	2
Machinery depreciation	1,044				
Building depreciation	328	Less interest	3,708		
Interest, Investment	3,708			Labor Requirements	
		Return to Labor and	$ 8,832		
Total Expense	$23,211	Management		Operator Days	348

Table 13. (con't)

Cropping Plan						Sold		
Crop	Acres	Yield	Unit	Pro-duction	Farm Use	Amount	Price	Value
Corn	140	70	bu.	9,800	8,355	1,445	$1.00	$ 1,445
Oats	20	55	bu.	800	800			
Soybeans	50	25	bu.	1,250		1,250	2.25	2,812
Alfalfa-Brome Hay	20	3	ton		60			

Livestock Plan				Sold		
Item	Grade	Number	Av. Wt. Per Head	Amount	Price	Value
Cattle, Steers	good-choice	60	1,050	63,000	$ .22	$13,860
Hogs	1 & 2	350	225	72,675	.16	11,628
Sows		25	400	10,000	.13	1,300

Total Receipts for Cattle and Livestock $31.045

Table 14. Summary of Model B-1, 240 Acre Beef Farm
Lac qui Parle County, Minnesota

Financial Summary

Expenses		Receipts		Inventory Value	
Seed	$ 510	Crops	$ 1,565	Land and Buildings	$50,000
Fertilizer	2,120	Livestock	46,200		
Custom work	23			Machinery and Equipment	13,445
Machinery repair	537	Total	$47,765		
Fuel, Oil, Lubricant	702			Livestock	22,250
Building repair	746	Less cash expense	33,526		
Taxes, Insurance	1,738				
Crop chemicals	546	Net cash income	$14,239	Inventory Numbers	
Feed	2,100				
Feeder Cattle	22,250	Less depreciation	1,983	Feeder Cattle	200
Other	2,254				
		Net farm income	$12,256		
Machinery depreciation	1,344			Labor Requirements	
Building depreciation	639	Less interest	4,850		
Interest, Investment	4,850			Operator Days	260
		Return to Labor and			
Total Expense	$40,359	Management	$ 7,406		

Table 14. (Con't)

Cropping Plan						Sold		
Crop	Acres	Yield	Unit	Pro-duction	Farm Use	Amount	Price	Value
Corn	79.5	70	bu.	5,565	4,000	1,565	$1.00	$ 1,565
Corn, silage	42	12	ton	508	508			
Oats, silage	28.5	7	ton	200	200			
Alfalfa, haylage	80	5	ton	400	400			

Livestock Plan				Sold		
Item	Grade	Number	Av. Wt. Per Head	Amount	Price	Value
Cattle, Steers	Good-choice	200	1,050	210,000	$ .22	$46,200
			Total Receipts for Crops and Livestock			$47,765

Table 15. Summary of Model A-1, 240 Acre Beef Cow and Hog Farm
Lac qui Parle County, Minnesota

Financial Summary

Expenses		Receipts		Inventory Value	
Seed	$ 597	Crops	$ 1,871	Land and Buildings	$45,000
Fertilizer	1,429	Livestock	21,088		
Custom work	1,227			Machinery and Equipment	10,445
Machinery repair	375	Total	$22,959		
Fuel, Oil, Lubricant	475			Livestock	12,000
Building repair	325	Less cash expense	10,796		
Taxes, Insurance	1,366				
Crop chemicals	152	Net cash income	$12,163	Inventory Numbers	
Feed	3,028				
Other	1,822	Less depreciation	1,372	Feeder cattle	28
				Cows	40
Machinery depreciation	1,044	Net farm income	$10,791	Sows	25
Building depreciation	328			Boars	2
Interest, Investment	3,771	Less interest	3,771	Bulls	1
Total Expense	$15,939	Return to Labor and Management	$ 7,020	Labor Requirements	
				Operator Days	330

Table 15.(Con't)

Cropping Plan						Sold		
Crop	Acres	Yield	Unit	Pro-duction	Farm Use	Amount	Price	Value
Corn	101.5	70	bu.	7,105	6,358	747	$1.00	$ 747
Oats	12	4	AUM	48	48			
Oats	15	55	bu.	825	825			
Soybeans	20	25	bu.	500		500	2.25	1,125
Alfalfa-Brome Hay	37.5	3	ton	112	112			
Alfalfa-Brome Pasture	44	7.5	AUM	330	330			

Livestock Plan				Sold		
Item	Grade	Number	Av. Wt. Per Head	Amount	Price	Value
Cattle, Steers	Good-choice	18	1,050	18,900	$ .22	$ 4,158
Fed Heifers	Good-choice	10	900	9,000	.21	1,890
Cull Heifers		2	600	1,200	.20	240
Cull cows		6	1,000	6,000	.15	900
Hogs	1 & 2	350	225	78,750	.16	12,600
Sows		25	400	10,000	.13	1,300
				Total Receipts for Crops and Livestock		$22,959

Table 16. Summary of Model D-1, 240 Acre Cash Crop Farm
Lac qui Parle County, Minnesota

Financial Summary

Expenses		Receipts		Inventory Value	
Seed	$ 772	Crops	$14,440	Land and Buildings	$40,000
Fertilizer	1,538	Work off the farm	600		
Custom Work	32			Machinery and Equipment	9,375
Machinery repair	375	Total	$15,040		
Fuel, Oil, Lubricant	450				
Building repair	273	Less cash expense	5,432	Inventory Numbers	
Taxes, Insurance	1,312				
Crop chemicals	280	Net cash income	$ 9,608	None	
Other	400				
		Less depreciation	1,171		
Machinery depreciation	937			Labor Requirements	
Building depreciation	234	Net farm income	$ 8,437		
Interest, Investment	2,900			Operator Days	182
		Less interest	2,900		
Total Expense	$ 9,503				
		Return to Labor and Management	$ 5,537		

Table 16. (Con't)

Cropping Plan						Sold		
Crop	Acres	Yield	Unit	Pro-duction	Farm Use	Amount	Price	Value
Corn	130	70	bu.	9,100		9,100	$1.00	$ 9,100
Flax	10	14	bu.	140		140	3.00	420
Soybeans	80	25	bu.	2,000		2,000	2.25	4,500
Alfalfa-Brome Hay	10	3	ton	30		30	14.00	420
						Total Receipts for Crops		$14,440

Table 17. Summary of Model A-2, 400 Acre Hog and Beef Farm
Lac qui Parle County, Minnesota

Financial Summary

Expenses		Receipts		Inventory Value	
Seed	$ 1,310	Crops	$12,597	Land and Buildings	$76,000
Fertilizer	2,405	Livestock	27,134		
Custom work	2,940			Machinery and Equipment	17,179
Machinery repair	687	Total	$39,731		
Fuel, Oil, Lubricant	750			Livestock	11,400
Building repair	422	Less cash expense	20,889		
Taxes, Insurance	1,750				
Crop Chemicals	469	Net cash income	$18,842	Inventory Numbers	
Feed	3,828				
Feeder Cattle	4,275	Less depreciation	2,048	Feeder Cattle	38
Other	2,053			Sows	18
		Net farm income	$16,794	Pigs	250
Machinery depreciation	1,717			Boars	2
Building depreciation	331	Less interest	6,280		
Interest, Investment	6,280				
		Return to Labor and		Labor Requirements	
Total Expense	$29,217	Management	$10,514		
				Operator Days	367

Table 17. (Con't)

Cropping Plan						Sold		
Crop	Acres	Yield	Unit	Pro-duction	Farm Use	Amount	Price	Value
Corn	200	70	bu.	14,000	9,278	4,722	$1.00	$ 4,722
Oats	20	55	bu.	1,000	1,000			
Soybeans	140	25	bu.	3,500		3,500	2.25	7,875
Alfalfa-Brome Hay	20	3	ton	60				

Livestock Plan							
					Sold		
Item	Grade	Number	Av. Wt. Per Head	Amount	Price	Value	
Cattle, Steers	Good-choice	38	1,050	39,900	$ .22	$ 8,778	
Hogs	1 & 2	468	225	105,300	.16	16,484	
Sows		36	400	14,400	.13	1,872	
				Total Receipts for Crops and Livestock		$39,731	

Table 18. Summary of Model B-2, 400 Acre Beef Farm
Lac qui Parle County, Minnesota

Financial Summary

Expenses		Receipts		Inventory Value	
Seed	$ 1,208	Crops	$11,507	Land and Buildings	$81,000
Fertilizer	2,945	Livestock	50,600		
Custom Work	389			Machinery and Equipment	17,840
Machinery repair	713	Total	$62,107		
Fuel, Oil, Lubricant	748			Livestock	30,000
Building repair	706	Less cash expense	43,216		
Taxes, Insurance	2,095				
Crop Chemicals	424	Net cash income	$18,891	Inventory Numbers	
Feed	3,480				
Feeder Cattle	28,600	Less depreciation	2,389	Feeder Cattle	200
Other	1,908				
		Net farm income	$16,502		
Machinery depreciation	1,784			Labor Requirements	
Building depreciation	605	Less interest	7,255		
Interest, Investment	7,255			Operator Days	303
		Return to Labor and			
Total Expense	$52,860	Management	$ 9,247		

Table 18. (Con't)

Cropping Plan						Sold		
Crop	Acres	Yield	Unit	Pro-duction	Farm Use	Amount	Price	Value
Corn	192	70	bu.	13,440	8,658	5,882	$1.00	$ 5,882
Corn silage	34	12	ton	400	400			
Oats	27	55	bu.	1,485	1,485			
Soybeans	100	25	bu.	2,500		2,500	2.25	5,625
Alfalfa-Brome Hay	27	3	ton	80	80			

Livestock Plan				Sold		
Item	Grade	Number	Av. Wt. Per Head	Amount	Price	Value
Cattle, Steers	Good-choice	200	1,150	230,000	$ .22	$50,600
			Total Receipts for Crops and Livestock			$62,107

Table 19. Summary of Model C-2, 400 Acre Beef Cow and Hog Farm
Lac qui Parle County, Minnesota

Financial Summary

Expenses		Receipts		Inventory Value	
Seed	$ 1,109	Crops	$11,662	Land and Buildings	$72,500
Fertilizer	2,628	Livestock	20,188		
Custom Work	1,429			Machinery and Equipment	17,170
Machinery repair	687	Total	$31,850		
Fuel, Oil, Lubricant	800			Livestock	12,000
Building repair	422	Less cash expense	14,387		
Taxes, Insurance	1,848				
Crop chemicals	379	Net cash income	$17,463	Inventory Numbers	
Feed	3,268				
Other	1,817	Less depreciation	2,048	Feeder Cattle	30
				Cows	40
Machinery depreciation	1,717	Net farm income	$15,415	Sows	25
Building depreciation	331			Boars	2
Interest, Investment	6,025	Less interest	6,025	Bulls	1
Total Expense	$22,462	Return to Labor and Management	$ 9,390	Labor Requirements	
				Operator Days	398

Table 19. (Con't)

Cropping Plan						Sold		
Crop	Acres	Yield	Unit	Pro-duction	Farm Use	Amount	Price	Value
Corn	200	70	bu.	14,000	6,358	7,642	$1.00	$ 7,642
Oats	15	55	bu.	825	825			
Oats, Pasture	12	4	AUM	48	48			
Soybeans	71.5	25	bu.	1,787		1,787	2.25	4,020
Alfalfa-Brome Hay	37.5	3	ton	112	112			
Alfalfa-Brome Pasture	44	7.5	AUM	330	330			

Livestock Plan				Sold		
Item	Grade	Number	Av. Wt. Per Head	Amount	Price	Value
Cattle, Steers	Good-choice	18	1,050	18,900	$ .22	$ 4,158
Fed Heifers	Good-choice	10	900	9,000	.21	1,890
Cull Heifers		2	600	1,200	.20	240
Cull Cows		6	1,000	6,000	.15	900
Hogs	1 & 2	350	225	73,125	.16	11,700
Sows		25	400	10,000	.13	1,300
				Total Receipts for Crops and Livestock		$31,850

Table 20. Summary of Model D-2, 400 Acre Cash Crop Farm
Lac qui Parle County, Minnesota

Financial Summary

Expenses		Receipts		Inventory Value	
Seed	$ 1,236	Crops	$24,390	Land and Buildings	$73,000
Fertilizer	2,604	Work off the farm	500		
Custom Work	60			Machinery and Equipment	17,090
Machinery repair	683	Total	$24,890		
Fuel, Oil, Lubricant	631				
Building repair	478	Less cash expense	9,361	Inventory Numbers	
Taxes, Insurance	2,483				
Crop Chemicals	636	Net cash income	$15,529	None	
Other	550				
		Less depreciation	2,119		
Machinery depreciation	1,709			Labor Requirements	
Building depreciation	410	Net farm income	$13,410		
Interest, Investment	6,115			Operator Days	232
		Less interest	6,115		
Total Expense	$17,595				
		Return to Labor and Management	$ 7,295		

Table 20. (Con't)

Cropping Plan						Sold		
Crop	Acres	Yield	Unit	Pro-duction	Farm Use	Amount	Price	Value
Corn	240	70	bu.	16,800		16,800	$1.00	$16,800
Flax	10	14	bu.	140		140	3.00	420
Soybeans	120	25	bu.	3,000		3,000	2.25	6,750
Alfalfa-Brome Hay	10	3	ton	30		30	.14	420
						Total Receipts for Crops		$24,390

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